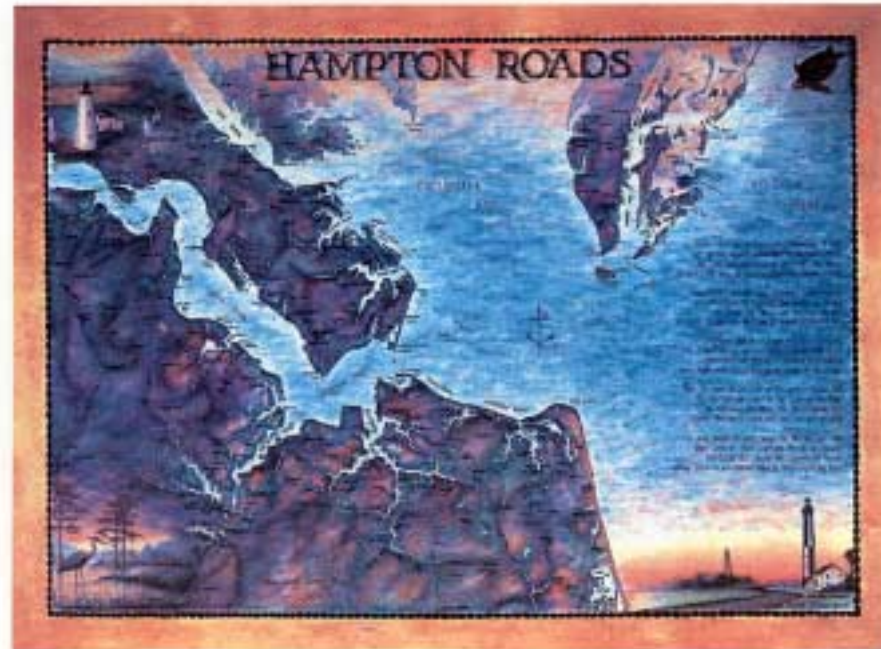


# **Navigation Management Plan for the Port of Hampton Roads, Virginia**



*Hampton Roads Harbor art work by Terry Moore reproduced by permission of  
Moore Art, Inc., Copyright 1991. All rights reserved.  
[www.nauticalhangups.com](http://www.nauticalhangups.com)*

**NAVIGATION MANAGEMENT PLAN  
FOR THE  
PORT OF HAMPTON ROADS, VIRGINIA**

**APPROVALS REGISTER**

	<u>Signature</u>	<u>Date</u>
Presented for Approval By: (Project Manager)	<u>Robert N. Peltow, Jr.</u>	<u>2/7/00</u>
Approved By:		
Deputy District Engineer for Project Management	<u>M. Thomassa</u>	<u>14 Feb 00</u>
Chief, Contracting Division	<u>Judith W. Rowland</u>	<u>2/7/00</u>
Chief, Real Estate Division	<u>Robert P. Young</u>	<u>2/7/00</u>
Chief, Resource Management Office	<u>[Signature]</u>	<u>2/7/00</u>
Chief, Technical Services Division	<u>[Signature]</u>	<u>[Date]</u>
District Counsel	<u>Joseph R. Losch</u>	<u>2/14/00</u>
Virginia Port Authority	<u>Randy M. [Signature]</u>	<u>2/7/00</u>
District Engineer	<u>A. Blawell</u>	<u>2/10/2000</u>

---

## EXECUTIVE SUMMARY

---

The Navigation Management Plan covers all navigation-related activities lying within the port and was developed in cooperation with the Virginia Port Authority with substantial input from numerous maritime interests located throughout the Hampton Roads area. The primary objectives of the Plan are to provide: (1) a comprehensive, integrated plan for the port; (2) a vehicle for spanning jurisdictions and disciplines to identify and resolve existing and potential issues; and (3) documentation of existing corporate knowledge.

Port users and interests identified over 50 problems, needs, concerns, and opportunities associated with the use and development of the port. Circle "A" stakeholders, the principal advisers and reviewers for the development of the Plan, reviewed the total list of concerns and prioritized the top 15 concerns as follows:

### TOP PRIORITIZED CONCERNS

Concern	Priority ranking
Maintenance dredging: Continued and timely maintenance of port channels	1
Norfolk Harbor Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point	2
Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites	3
Use of Craney Island Dredged Material Area for port development	4

TOP PRIORITIZED CONCERNS  
(Cont'd)

Concern	Priority ranking
Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point	5
Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels	6
Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point	7 (tie)
Funding	7 (tie)
Channel to Newport News: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet	9
Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad bridge	10 (tie)
Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (1)	10 (tie)
Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge	12
Water quality	13
Channel to Newport News: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet	14
Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (1)	15

(1) Please see anchorage designations for (K-1), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).



From these top 15 prioritized concerns, a long-range strategic plan was developed. The plan is divided into two general categories: (1) new construction elements and (2) ongoing strategic elements. The new construction element section is further separated into channel elements and other elements. Channel elements include the various channel deepening considerations for the Norfolk Harbor Channel, the Channel to Newport News, the approach channels, the Elizabeth River Channel, the Southern Branch Channel, and the widening of the turning area at the Sewells Point Anchorage. Other new construction elements include the extension of the life and potential port development of the Craney Island Dredged Material Area. Ongoing strategic elements include maintenance dredging, funding, and improving water quality. The new construction elements associated with extending the useful life and port development of the Craney Island Dredged Material Area, as well as the ongoing strategic elements, would be accomplished concurrently with the implementation of the channel elements of the Plan. The proposed order of implementation is as follows:

1. Inbound channels to 50-foot depth
2. Widening turn at Sewells Point (K-1) anchorage to 50-foot depth
3. Outbound channels to 55-foot depth
4. Widening turn at Sewells Point (K-1) anchorage to 55-foot depth
5. Elizabeth River and Southern Branch Channels to 45-foot depth
6. Southern Branch channel (Upper Reach) to 40-foot depth
7. Inbound channels to 55-foot depth

Extending the useful life and port development of the Craney Island Dredged Material Area would be considered concurrently with the above listed channel elements. The ongoing elements of the Plan, i.e. maintenance dredging, funding, and improving water quality, would be a continuing part of the Plan.

The Plan was reviewed and approved by the Circle "A" stakeholders. It has been developed for planning purposes and to give appropriate decision makers information from which implementation and funding decisions may be made. The Plan is flexible,

sensitive to the passing of time and events, and will require periodic updates to keep it current and viable. It is likely that the future of the port will reflect the past and there will never be enough resources to accomplish all that is desired. The Navigation Management Plan will assist Federal, state, local, and private investors to better allocate scarce port resources based on the prioritized concerns as established by port users and interests.

---

## **PREFACE**

---

This document presents the results of a comprehensive 3-year coordinated effort to develop a Navigation Management Plan for the Port of Hampton Roads, Virginia, hereinafter referred to as the "Plan." The authority for preparation of the Plan is provided by Section 201(a) of Public Law 99-662, the Water Resources Development Act of 1986 (WRDA 86), enacted on November 17, 1986, as a part of the Norfolk Harbor and Channels, Virginia project. The Plan's development was directed by the Norfolk District, Army Corps of Engineers in conjunction with the Virginia Port Authority (VPA), the local sponsor. It involved the participation of over 400 stakeholders to provide for the most efficient management of the port's navigation features and to ensure that these features effectively accommodate future development and growth.

Presentation of the Plan is included in a main report supplemented by appropriate appendixes. The main report is divided into six sections. Section I provides the introductory information including the purpose and goals of the Plan, a description of the port complex, the identification of stakeholders, a description of the coordination process, and a general outline of the content of the Plan. Section II presents a discussion of the Corps of Engineers navigation projects that are located in the Hampton Roads harbor area. Section III describes pertinent current and previously studied projects and potential future studies/projects by the Corps of Engineers within the port and vicinity. Section IV presents general and specific navigation-related constraints, problems, needs, and opportunities identified within the port. Section V presents alternative solutions for addressing the primary concerns identified in Section IV. Finally, Section VI concludes with a description of a long-range plan to best accommodate the future management and development of the port's navigation features. The appendixes include eight sections providing pertinent, detailed information to support the main report.

America's Waterways Artist Terry Moore has graciously allowed the Corps of Engineers to reproduce the "Hampton Roads" map from the Waterway Collection™ for the cover of the Navigation Management Plan. For more information about his collection of 45 artistic maps of our nation's waterways, contact Moore Art, Inc., at 1-800-545-1847 or visit their Internet address at [www.nauticalhangups.com](http://www.nauticalhangups.com).

---

## TABLE OF CONTENTS

---

<u>Item</u>	<u>Page</u>
APPROVALS REGISTER	
EXECUTIVE SUMMARY	i
PREFACE	v
<u>SECTION I--INTRODUCTION</u>	
GENERAL	I-1
PURPOSE	I-2
AREA DESCRIPTION	I-3
GENERAL SETTING	I-3
IMPORTANCE OF THE HARBOR	I-4
KEY FUTURE NON-CORPS OF ENGINEERS ACTIVITIES	I-16
EXISTING REQUIREMENTS AND PROCEDURES	I-20
REGULATORY	I-20
ENVIRONMENTAL	I-22
PROJECT COOPERATION AGREEMENTS	I-23
OTHER	I-24
HISTORICAL RECORDS AND DATA SOURCES	I-25
PURPOSE	I-25
METHODOLOGY	I-26

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
SUMMARY	I-26
COORDINATION PROCESS	I-32
CIRCLES OF INFLUENCE	I-32
WORKSHOPS AND MEETINGS	I-39
RECOGNITION	I-39
PERIODIC UPDATING PROCEDURE	I-42
<u>SECTION II--POST-AUTHORIZATION CORPS OF ENGINEER PROJECTS</u>	
GENERAL	II-1
CONSTRUCTED PROJECTS/ELEMENTS OF PROJECTS	II-16
THIMBLE SHOAL CHANNEL	II-23
NORFOLK HARBOR PROJECT	II-24
CHANNEL TO NEWPORT NEWS	II-32
ATLANTIC INTRACOASTAL WATERWAY	II-33
LYNNHAVEN INLET	II-35
LITTLE RIVER (CREEK)	II-36
WILLOUGHBY CHANNEL	II-37
LAFAYETTE RIVER	II-37
CHANNEL TO NANSEMOND ORDNANCE DEPOT	II-38
BENNETTS CREEK	II-38
NANSEMOND RIVER	II-39

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
NEWPORT NEWS CREEK	II-39
HAMPTON CREEK	II-41
CHANNEL FROM PHOEBUS	II-41
COLLECTION AND REMOVAL OF DRIFT	II-41
PREVENTION OF OBSTRUCTIVE AND INJURIOUS DEPOSITS	II-42
RELATED PROJECTS	II-42
PROJECT ELEMENTS NOT YET CONSTRUCTED	II-43
50-FOOT INBOUND ELEMENT (50-FOOT FULL- WIDTH CHANNELS)	II-51
55-FOOT OUTBOUND ELEMENT	II-52
55-FOOT INBOUND ELEMENT (55-FOOT FULL- WIDTH CHANNELS)	II-54
ELIZABETH RIVER CHANNEL AND SOUTHERN BRANCH CHANNEL	II-56
DEFERRED ANCHORAGES	II-57
<u>SECTION III--PRE-AUTHORIZATION CORPS OF ENGINEERS PROJECTS/STUDIES</u>	
GENERAL	III-1
SECTION 933 STUDIES	III-1
SANDBRIDGE BEACH, VIRGINIA BEACH	III-3
VIRGINIA BEACH RESORT STRIP, VIRGINIA BEACH	III-3
OCEAN PARK BEACH, VIRGINIA BEACH	III-3

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
CENTRAL OCEAN VIEW BEACH, NORFOLK	III-4
WILLOUGHBY SPIT AREA, NORFOLK	III-4
DREDGING MASTER PLAN FOR THE CITY OF NORFOLK	III-4
ELIZABETH RIVER ENVIRONMENTAL RESTORATION STUDY	III-5
EASTWARD EXPANSION OF CRANEY ISLAND STUDY	III-6
LYNNHAVEN RIVER ENVIRONMENTAL RESTORATION STUDY	III-9
<u>SECTION IV--PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES</u>	
GENERAL	IV-1
GENERAL CONCERNS	IV-1
ANCHORAGES	IV-2
CHANNELS	IV-2
DREDGED MATERIAL PLACEMENT AREAS	IV-3
ENVIRONMENTAL CONCERNS	IV-3
FUNDING	IV-4
LANDSIDE CONCERNS	IV-4
NAVIGATION INFORMATION	IV-4
RULES AND REGULATIONS	IV-5
SUPPLEMENTAL FACILITIES	IV-5



TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
SPECIFIC CONCERNS	IV-6
ANCHORAGES	IV-10
CHANNELS	IV-10
DREDGED MATERIAL PLACEMENT AREAS	IV-16
ENVIRONMENTAL CONCERNS	IV-17
FUNDING	IV-18
LANDSIDE CONCERNS	IV-19
NAVIGATION INFORMATION	IV-21
RULES AND REGULATIONS	IV-22
SUPPLEMENTAL FACILITIES	IV-23
PRIORITIZATION CRITERIA AND RANKING	IV-24
<u>SECTION V--RESOLUTION</u>	
GENERAL	V-1
LISTING OF CONCERNS TO BE EVALUATED	V-1
CONCERN NUMBER 1	V-3
DESCRIPTION	V-3
PROPOSED ACTION	V-3
PLAN ACCOMPLISHMENTS	V-4
ANALYSES	V-4
DIVISION OF PLAN RESPONSIBILITY	V-5
CONCLUSIONS	V-5

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
CONCERN NUMBER 2	V-6
DESCRIPTION	V-6
PROPOSED ACTION	V-6
PLAN ACCOMPLISHMENTS	V-7
ANALYSES	V-7
DIVISION OF PLAN RESPONSIBILITY	V-11
CONCLUSIONS	V-14
CONCERN NUMBER 3	V-14
DESCRIPTION	V-14
PROPOSED ACTION	V-14
PLAN ACCOMPLISHMENTS	V-15
ANALYSES	V-15
DIVISION OF PLAN RESPONSIBILITY	V-17
CONCLUSIONS	V-17
CONCERN NUMBER 4	V-18
DESCRIPTION	V-18
PROPOSED ACTION	V-18
PLAN ACCOMPLISHMENTS	V-19
ANALYSES	V-19
DIVISION OF PLAN RESPONSIBILITY	V-20
CONCLUSIONS	V-21

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
CONCERN NUMBER 5	V-21
DESCRIPTION	V-21
PROPOSED ACTION	V-21
PLAN ACCOMPLISHMENTS	V-22
ANALYSES	V-22
DIVISION OF PLAN RESPONSIBILITY	V-25
CONCLUSIONS	V-26
CONCERN NUMBER 6	V-26
DESCRIPTION	V-26
PROPOSED ACTION	V-27
PLAN ACCOMPLISHMENTS	V-27
ANALYSES	V-27
DIVISION OF PLAN RESPONSIBILITY	V-30
CONCLUSIONS	V-31
CONCERN NUMBER 7 (TIE)	V-32
DESCRIPTION	V-32
PROPOSED ACTION	V-32
PLAN ACCOMPLISHMENTS	V-33
ANALYSES	V-33
DIVISION OF PLAN RESPONSIBILITY	V-36
CONCLUSIONS	V-39

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
CONCERN NUMBER 7 (TIE)	V-39
DESCRIPTION	V-39
PROPOSED ACTION	V-39
PLAN ACCOMPLISHMENTS	V-39
CONCLUSIONS	V-40
CONCERN NUMBER 9	V-40
DESCRIPTION	V-40
PROPOSED ACTION	V-40
PLAN ACCOMPLISHMENTS	V-41
ANALYSES	V-41
DIVISION OF PLAN RESPONSIBILITY	V-44
CONCLUSIONS	V-46
CONCERN NUMBER 10 (TIE)	V-47
DESCRIPTION	V-47
PROPOSED ACTION	V-47
PLAN ACCOMPLISHMENTS	V-48
ANALYSES	V-48
DIVISION OF PLAN RESPONSIBILITY	V-50
CONCLUSIONS	V-51
CONCERN NUMBER 10 (TIE)	V-52
DESCRIPTION	V-52

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
PROPOSED ACTION	V-52
PLAN ACCOMPLISHMENTS	V-52
ANALYSES	V-52
DIVISION OF PLAN RESPONSIBILITY	V-55
CONCLUSIONS	V-56
CONCERN NUMBER 12	V-56
DESCRIPTION	V-56
PROPOSED ACTION	V-57
PLAN ACCOMPLISHMENTS	V-57
ANALYSES	V-57
DIVISION OF PLAN RESPONSIBILITY	V-60
CONCLUSIONS	V-61
CONCERN NUMBER 13	V-62
DESCRIPTION	V-62
PROPOSED ACTION	V-62
PLAN ACCOMPLISHMENTS	V-63
DIVISION OF PLAN RESPONSIBILITY	V-63
CONCLUSIONS	V-66
CONCERN NUMBER 14	V-66
DESCRIPTION	V-66
PROPOSED ACTION	V-66

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
PLAN ACCOMPLISHMENTS	V-67
ANALYSES	V-67
DIVISION OF PLAN RESPONSIBILITY	V-70
CONCLUSIONS	V-72
CONCERN NUMBER 15	V-72
DESCRIPTION	V-72
PROPOSED ACTION	V-72
PLAN ACCOMPLISHMENTS	V-73
ANALYSES	V-73
DIVISION OF PLAN RESPONSIBILITY	V-75
CONCLUSIONS	V-76
<u>SECTION VI--LONG-RANGE PLANNING STRATEGY</u>	
GENERAL	VI-1
LONG-RANGE STRATEGIC PLAN ELEMENTS	VI-3
NEW CONSTRUCTION ELEMENTS	VI-4
ONGOING STRATEGIC ELEMENTS	VI-15
SUMMARY	VI-17
CONCLUSIONS	VI-21

## LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
I-1	EXPORTS, IMPORTS, AND COASTWISE RECEIPTS AND SHIPMENTS MOVING THROUGH THE PORT OF HAMPTON ROADS IN 1997	I-6
I-2	COMMERCE THROUGH THE PORT OF HAMPTON ROADS, 1965 TO 1997	I-7
I-3	TRIPS AND DRAFTS OF VESSELS CALLING AT THE PORT OF HAMPTON ROADS, 1965 TO 1997	I-9
I-4	SHELLFISH AND FINFISH LANDINGS, 1992 TO 1998	I-14
I-5	PLEASURE BOAT REGISTRATIONS	I-15
I-6	HISTORICAL RECORDS AND DATA SOURCES	I-27
I-7	CIRCLE "A" STAKEHOLDERS	I-33
II-1	CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS	II-2
II-2	CORPS OF ENGINEERS PROJECT MAINTENANCE	II-17
II-3	CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED	II-45
IV-1	IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES	IV-6
IV-2	PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES	IV-25
V-1	PRIORITIZED CONCERNS SELECTED FOR EVALUATION	V-2
V-2	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 2	V-9
V-3	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 2	V-13
V-4	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 5	V-23

LIST OF TABLES  
(Cont'd)

<u>No.</u>	<u>Title</u>	<u>Page</u>
V-5	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 5	V-26
V-6	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 6	V-28
V-7	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 6	V-31
V-8	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 7 (TIE)	V-35
V-9	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 7 (TIE)	V-38
V-10	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 9	V-43
V-11	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 9	V-46
V-12	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 10 (TIE)	V-49
V-13	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 10 (TIE)	V-51
V-14	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 10 (TIE)	V-54
V-15	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 10 (TIE)	V-56
V-16	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 12	V-59
V-17	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 12	V-61
V-18	WATER QUALITY PROTECTION PROGRAMS IN VIRGINIA	V-64



LIST OF TABLES  
(Cont'd)

<u>No.</u>	<u>Title</u>	<u>Page</u>
V-19	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 14	V-69
V-20	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 14	V-71
V-21	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 15	V-74
V-22	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 15	V-76
VI-1	COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER 2 AND 9	VI-8
VI-2	COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER 6 AND 10 (TIE)	VI-11
VI-3	COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER 7 (TIE) AND 14	VI-14
VI-4	LONG-TERM PLANNING STRATEGY SUMMARY	VI-18

LIST OF PLATES

<u>No.</u>	<u>Title</u>
1	LOCATION MAP
2	LYNNHAVEN-LITTLE CREEK AREA
3	NORTHSIDE HAMPTON ROADS AREA
4	SOUTHSIDE HAMPTON ROADS AREA, PART 1
5	SOUTHSIDE HAMPTON ROADS AREA, PART 2
6	NANSEMOND RIVER AREA
7	LOCALLY PREFERRED CORRIDOR

LIST OF PLATES  
(Cont'd)

<u>No.</u>	<u>Title</u>
8	SECTION 933 STUDIES

LIST OF APPENDIXES

A	GLOSSARY
B	PUBLISHED CHARTS AND MAPS
C	SHORELINE USE
D	LAWS, REGULATIONS, AND PERMITTING INFORMATION
E	HISTORICAL RECORDS, DATA SOURCES, AND OTHER REFERENCE MATERIAL
F	MAILING LIST
G	WORKSHOP NOTES
H	ENVIRONMENTAL AWARD AND FINANCIAL INCENTIVE PROGRAMS

# **SECTION I**

## **INTRODUCTION**

---

## **SECTION I**

### **INTRODUCTION**

---

#### **GENERAL**

The Port of Hampton Roads is one of the busiest ports in the United States, serving as the center of substantial industrial, commercial, and military activity for the region. Indeed, it is a large and complex development with a multitude of supporting interests and activities. The port is also the largest exporter of coal in the world and contains one of the largest concentrations of naval installations in the world. In 1997, over 67 million tons of commerce, including over 45 million tons of coal, moved through its facilities. It has been estimated that over 100,000 jobs within the Commonwealth are directly related to port activity. The Commonwealth of Virginia, acting through the VPA, owns and manages three marine terminals located within the port that trade with over 100 nations worldwide. Vessels of every size and type transit the port waters, ranging from the largest bulk coal carriers and aircraft carriers to small commercial fishing boats and pleasure craft.

There are a number of Federally-maintained deep-draft navigation channels serving the port with maximum depths up to 50 feet (all depths in the Plan refer to mean lower low water [m.l.l.w.], except where otherwise indicated). In addition, several channel deepening and anchorage projects with depths up to 55 feet have been authorized but have not yet been constructed. Long-term planning for future navigation and related needs of the port is essential to provide for the future development, growth, viability, and competitiveness of the port. Planning for the port's future can best be pursued through a comprehensive Navigation Management Plan.

The first section of the Plan discusses the purposes and goals that the Plan is designed to achieve and describes the port complex, including its location, economic and military importance, and key future non-Corps of Engineers activities. It also contains a discussion regarding existing requirements and procedures for navigation-related projects. Pertinent background information concerning prior studies and reports, existing data and information records, and histories of navigation projects and other port-related activities is also included in Section I. In addition, this section identifies the key stakeholders involved in the use, operation, maintenance, and development of the port navigation features and explains their roles and responsibilities. The coordination process to involve all concerned stakeholders is discussed, including a description of the process necessary to prioritize the constraints, problems, needs, concerns, and opportunities for improvements identified in Section IV. Finally, a procedure for periodic updating is included to ensure that the Plan will remain current and viable for future use. Appendix A, a glossary, and Appendix B, a listing of published charts and maps of the area, are provided for your general information.

## **PURPOSE**

The general purposes of the Plan are to provide a long-range strategy for improvements to the port's navigation features and to ensure that these navigation features effectively accommodate future development and growth. To accomplish this, the Plan stresses three specific purposes: (1) to provide a comprehensive, integrated, fully coordinated, flexible plan for the port; (2) to provide a vehicle for spanning jurisdictions and disciplines to identify and resolve existing and potential issues; and (3) to provide documentation of existing corporate knowledge.

Obviously, plans currently exist in this District, the VPA, and other key organizations in the port area that chart a future course for some functional elements; however, there is no comprehensive plan that addresses the integration of these separate plans and interests with the betterment of the port as the common goal. This plan will

help facilitate the efficient use of future resources so that optimum results will be more easily obtainable.

In addition, the Plan provides a mechanism to coordinate comprehensive short- and long-range planning for early recognition of potential issues and problems. Early identification will greatly assist in obtaining quick resolution, thereby, preventing more serious problems from developing later.

There is also a need to ensure the maintenance of existing corporate knowledge to prevent the loss of valuable information over time as key personnel change. The Plan will be a repository for relevant information, serving as a centralized single source of data readily available to port interests. The periodic updating of information will ensure the continuous availability of past and current data, regardless of personnel changes in key port agencies and interests.

## **AREA DESCRIPTION**

### **GENERAL SETTING**

The Port of Hampton Roads is located in the southeastern part of the Commonwealth of Virginia at the southern end of Chesapeake Bay, midway on the Atlantic Seaboard (approximately 170 miles south of Baltimore, Maryland and 220 miles north of Wilmington, North Carolina). The harbor is a natural roadstead of 25 square miles formed by the confluence of the James, Nansemond, and Elizabeth Rivers. It is recognized as one of the largest and finest natural harbors in the world and is a primary stimulus to the economic well-being of the region, the Commonwealth, and the nation. The land area surrounding the harbor encompasses about 1,500 square miles and includes the Cities of Chesapeake, Norfolk, Portsmouth, Suffolk, and Virginia Beach and Isle of Wight County on the southside and Hampton and Newport News on the northside, as shown on Plate 1. The population of this area is over 1.3 million people. Details on shoreline use for this area are discussed in Appendix C.

Vessels entering the harbor from the ocean follow a course through the Virginia Capes near Cape Henry, pass through Thimble Shoal Channel, which crosses the lower end of the Chesapeake Bay, and enter Hampton Roads between Old Point Comfort on the north and Willoughby Spit on the south. Two deep-water channels extend through Hampton Roads; one channel extends southward along the eastern side through the Elizabeth River and its Southern Branch, and the other channel extends westward to Hampton and Newport News. Principal waterways on the southside include the Lynnhaven River; Little Creek; the Elizabeth River and its Eastern, Southern, and Western Branches; the Lafayette River; Scotts Creek; the Nansemond River; and Chuckatuck Creek. Also, the route of the Atlantic Intracoastal Waterway traverses the Southern Branch of the Elizabeth River en route from Maine to Florida. On the northside, principal waterways include the James River, Newport News Creek, and Hampton Creek. Please see Plates 2, 3, 4, 5, and 6.

## **IMPORTANCE OF THE HARBOR**

The Port of Hampton Roads is one of the largest and most active ports in the United States. Foreign, national, regional, and local markets are conveniently accessible to the port through the numerous steamship services to worldwide ports and the strategic position that the port occupies with respect to the national and regional transportation patterns. The geographic location of the port and an excellent rail and highway network make it economically and efficiently available to a significant portion of the nation's population and manufacturing centers. The following paragraphs of this section discuss the principal activities associated with the port, including waterborne commerce, vessel traffic, shipbuilding and repair, military activities, port service industries, government agencies, and other port-related businesses. The port is most strategically located with respect to the vast coal fields of Virginia, West Virginia, and Kentucky and extensive amounts of steam and metallurgical coal resources are transported by rail from these areas to Norfolk and Newport News for both overseas shipment and domestic use. Other bulk commodities and breakbulk commodities also comprise a significant and important part of the waterborne shipments through the port. Container shipments have grown significantly in recent years and are projected to show substantial increases in the future.

The port generates significant local, regional, and national economic impacts, providing employment, payroll, and tax revenues in Hampton Roads, the Commonwealth, and the nation.

## **Commerce**

Terminal facilities located within the port accommodate movements of coal and petroleum products; grain; forest, lumber, and wood products; farm and food products; non-metallic minerals; stone, clay, glass, and concrete products; chemicals and allied products; metallic and primary metal products; manufactured goods and products; machinery and transportation equipment; beverages; and tobacco. The following table shows the principal exports, imports, coastwise, and internal shipments moving through the port during 1997, the latest year for which complete records are available.



Table I-1. EXPORTS, IMPORTS, AND COASTWISE RECEIPTS AND SHIPMENTS  
MOVING THROUGH THE PORT OF HAMPTON ROADS IN 1997  
(Thousands of short tons)

<u>Commodity</u>	<u>Exports</u>	<u>Imports</u>	<u>Coastwise</u>	<u>Internal</u>	<u>Total</u>
Coal	36,572	0	4,282	4,410	45,264
Crude materials	1,215	1,250	17	3,202	5,684
Manufactured goods	847	1,695	189	174	2,905
Food and farm products	1,779	1,041	11	310	3,141
Machinery and transportation equipment	1,083	1,331	12	1,776	4,202
Chemicals	1,156	780	140	407	2,483
Petroleum	84	1,194	559	1,872	3,709
Waste and scrap	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>2</u>
Total	42,736	7,291	5,212	12,151	67,390

Source: Waterborne Commerce of the United States (Army Corps of Engineers).

By far, the export of coal comprises the largest part of commerce moving through the port, accounting for over 45 million tons or 67 percent of total commerce and 86 percent of export tonnage in 1997. Coal also accounts for the largest part of coastwise and internal shipments, accounting for almost 9 million tons or 50 percent of the total in 1997. As the previous table indicates, exports, imports, coastwise, and internal shipments accounted for 63, 11, 8, and 18 percent, respectively, of total tonnage moving through the port in 1997.

Over the past 30 years, commerce through the port has fluctuated somewhat due to domestic and world-wide economic factors such as mine and rail strikes. In terms of

tonnage, obviously, any change in coal exports has a great impact on overall port commerce movements since, historically, coal shipments dominate cargo tonnage. During the 30-year period, however, there has been a general and consistent increase in foreign commerce tonnage moving through the port. The following table shows the total commerce tonnage moving through Hampton Roads at 10-year intervals over the past 30 years of record and for the year 1997, the most recent year for which complete records are available.

Table I-2. COMMERCE THROUGH THE PORT OF HAMPTON ROADS,  
1965 TO 1997  
(Millions of short tons)

<u>Category</u>	<u>1965</u>	<u>1975</u>	<u>1985</u>	<u>1995</u>	<u>1997</u>
Exports	35.1	43.3	48.8	49.7	42.7
Imports	4.3	7.6	5.4	9.9	7.3
Coastwise	7.4	2.7	3.3	4.7	5.2
Internal and local	<u>7.3</u>	<u>13.3</u>	<u>9.1</u>	<u>11.1</u>	<u>12.2</u>
Total	54.1	66.9	66.6	75.4	67.4

Sources: Waterborne Commerce of the United States (Army Corps of Engineers) and the Hampton Roads Maritime Association.

In recent years, the port has experienced substantial growth in containerized and breakbulk cargo. A report entitled "Virginia Port Authority 2010 Plan," dated August 1995 prepared by Vickerman, Zachary, and Miller for the VPA, indicates a potential for the year 2010 of a 250 percent increase in containerized cargo and a 200 percent increase in breakbulk cargo over 1994 levels.

## **Vessel Traffic**

Vessels of all types and sizes from ports all over the world call at Hampton Roads. They include large bulk coal carriers in the 170,000 Dead Weight Ton class with loaded drafts up to 59 feet, Navy ships such as aircraft carriers with drafts up to 40 feet, and small seafood work boats and pleasure craft. Traffic consists of vessels involved in foreign trade, coastwise movements, and local activities. Included are vessels from the many United States Government installations located adjacent to the harbor, particularly the Norfolk Naval Shipyard and the Norfolk Naval Base; the shipbuilding and repair activities at Newport News Shipbuilding and Drydock Company and other companies in the harbor engaged in ship maintenance work; the coal loading facilities at Norfolk and Newport News; and the VPA marine terminals located in Newport News, Norfolk, and Portsmouth. Nearly all the world's major shipping lines call at Hampton Roads. The following table shows total vessel trips, by draft, moving to and from the Port of Hampton Roads over the past 30 years by decade. The general decrease in total vessel trips as shown in the table is due in part to the increase in use of larger vessels, which permits more cargo to be transported with fewer vessel trips.

Table I-3. TRIPS AND DRAFTS OF VESSELS CALLING AT THE PORT OF  
HAMPTON ROADS, 1965 TO 1997

Draft (feet)	Years				
	1965	1975	1985	1995	1997
50 to 46	0	25	192	300	275
45 to 41	13	182	248	216	170
40 to 36	210	798	379	294	297
35 to 31	952	918	986	1,652	1,710
30 to 26	1,447	2,296	1,765	1,764	1,537
25 to 21	2,504	2,389	1,590	1,292	1,409
20 and less	<u>86,943</u>	<u>75,250</u>	<u>40,951</u>	<u>30,502</u>	<u>33,705</u>
Total	92,069	81,858	46,111	36,020	39,103

Sources: Waterborne Commerce of the United States (Army Corps of Engineers).

As the previous table indicates, the draft of vessels calling at the port has increased significantly since 1965 due to the economics of transporting commodities, particularly coal, in large vessels and the availability of deeper channels. More recent trends indicate larger ships becoming more prevalent in the containerized and general cargo trade in response to significant growth in world trade. Already on the containerized shipping scene are the so-called "mega ships," a term used generally for container ships with a capacity greater than 4,500 TEU's. (TEU is an abbreviation for twenty-foot equivalent unit, which is based on how many 20-foot-long containers a ship can carry.) In 1990, less than 6 percent of United States containerized cargo was shipped on vessels with greater than 4,000-TEU or more capacity; however, recent industry estimates project that by the year 2010, almost 40 percent of containerized cargo will move in vessels of this size or greater. These vessels will require adequate dockside facilities including special cranes sufficient to reach across the width of the vessels' decks. Also, the Port of

Hampton Roads has been able to attract larger shares of the East Coast markets due to its deep protected natural harbor, its excellent rail connections to the Midwest, good labor and management relations, and its ability to effectively accommodate growth. In 1996, Hampton Roads became the second largest general cargo port on the East Coast, trailing only New York. As an indication of the port's increased growth, it was only the fifth largest among East Coast ports in the mid-1980's.

### **Port Industry**

The tremendous amount of bulk and general cargo moving through the harbor as shown in Table I-1 is the basis for a wide range of port-related activity required to accommodate the movement and transfer of commerce, as well as provide services for the vessels engaged in foreign and domestic trade. Industrial activities that are directly port-dependent include railroads, trucking firms, ship chandlers, marine and industrial suppliers, stevedoring and charter firms, marine terminals, ship repair firms, towing and tug services, and broker and warehousing services. A number of manufacturing firms in the Hampton Roads area either import a substantial portion of their raw materials through the port and/or export commodities to foreign and domestic markets. Agricultural and mining activities are also dependent on the port for shipment and receipt of commodities such as grain, ores, and coal. A November 1997 report entitled, "The Economic Impact and Rate of Return of Virginia's Ports on the Commonwealth, 1995" (by Gilbert R. Yochum, Ph.D., and Vinod B. Agarwal, Ph.D., both of Old Dominion University in Norfolk, Virginia) indicates that employment in industry directly and indirectly associated with the port was over 128,000.

In addition to the outstanding harbor, the area provides a number of industrial advantages including excellent rail, air, and highway transportation systems; enterprise and foreign trade zones; a mild climate; an efficient labor force; ample electric power and other utility services; educational and research institutions; and recreation and cultural opportunities. The cities and counties of Hampton Roads have aggressive and informed planning and industrial development organizations that provide material assistance to new and expanding companies.

## **Military Activities**

Hampton Roads is the home of the nation's largest concentration of military installations, and their activities provide a major economic impact to the area. Overall, the area is home base for about 116,000 active duty military personnel and over 37,000 civilian employees. The largest facilities are the naval installations on the southside, where over 20 percent of the Navy's active duty personnel worldwide are assigned. Other facilities include the Army and Air Force bases on the northside in Newport News and Hampton. However, the Army, Navy, Air Force, Marines, and Coast Guard all have a significant presence in the region extending from northside and southside Hampton Roads to the North Carolina border. Many of the headquarters of major military commands are also located in the area. The headquarters of the Atlantic Fleet is situated in Norfolk. The Coast Guard's Atlantic Area Command and Maritime Defense Zone Atlantic is located in Portsmouth, making it the largest concentration of Coast Guard manpower in the country with about 2,500 personnel. Langley Air Force Base in Hampton is home to the Air Force's Air Combat Command. The Army has its Transportation Center located at Fort Eustis in Newport News and its Training and Doctrine Command located at Fort Monroe in Hampton. Furthermore, the Marine Corps is planning to move its Marine Forces Atlantic Command back to Norfolk from Camp Lejeune, North Carolina. A vital link to all of the commands mentioned is the United States Atlantic Command located in Norfolk, a joint service headquarters that is responsible for training most of the military's fighting units.

The military continues to be a strong presence in the area, although economic and other factors frequently impact its level of activity. However, not even the large budget cuts of recent years have substantially reduced the military's importance in the region. In many cases, base closings and consolidations of commands elsewhere have actually benefited the Hampton Roads area. The military will continue to be a major economic force in the area, and the harbor will continue to play a major role in accommodating and enhancing many aspects of military activities.

## **Economic Impacts**

The port generates substantial economic activity in the Hampton Roads area, the Commonwealth, and the nation. Vessels entering the harbor to load or discharge cargo require a wide range of services that provide employment, revenue, and payroll. Studies conducted at Old Dominion University, referenced previously, indicate that each ton of bulk cargo, container cargo, and breakbulk cargo passing through the port generates \$18.85, \$66.82, and \$110.64, respectively, within the Commonwealth's economy. Employment, wages, and tax revenues are generated by mining, manufacturing, and agricultural interests that depend on the harbor for delivery or shipment of commodities. These include interests such as coal mines in West Virginia, textile and furniture firms in North Carolina, and tobacco and grain producers in the hinterlands.

Several categories of industry are supported by the port. First, there are those companies required by the port to provide essential services such as terminal operations, ship repair, stevedoring, and vessel supply. The second type of industry includes those companies that are attracted to the port, because they need to either export commodities and/or import products for assembly in this country. Lastly, there are the interests that have expanded their markets due to reduced transportation costs, as represented by mining, manufacturing, and agricultural activities.

Several Commonwealth and Federal Government agencies also provide necessary port services, including the Virginia Department of Agriculture and Consumer Services, VPA, National Oceanic and Atmospheric Administration, U.S. Department of Agriculture, Army Corps of Engineers, Coast Guard, U.S. Customs Service, U.S. Immigration and Naturalization Service, U.S. Maritime Administration, and the U.S. Public Health Service. About 40 percent of the more than 128,000 people having port-related jobs were employed in basic or primary activities such as transportation, cargo handling, ship repair, mining, manufacturing, and agriculture. Companies engaged in basic activities either directly participate in the movement of waterborne commerce or extract or grow the materials that move through the port, as in the case of mining,

manufacturing, and agriculture. The remaining jobs are involved in secondary or supporting activities that provide services to people engaged in the basic activities.

In addition to providing jobs and wages, port activity also generates substantial tax revenues. In 1995, taxes paid to the Commonwealth and local governments by port industries and their employees were estimated at over \$122 million. A significant amount of Federal taxes are also generated by port activity.

A detailed and comprehensive explanation of the economic impact of port activities can be found in several reports prepared for the VPA by Gilbert R. Yochum and Vinod B. Agarwal of Old Dominion University. As discussed previously, their latest studies are presented a report dated November 1997, which is available from the VPA.

### **Other Port-Related Activities**

The importance of the harbor is also illustrated by several additional activities that have not been previously discussed. These activities include seafood harvesting and processing; pleasure boating and sport fishing; and visitation to several port-related recreational and historical points of interest located adjacent to the harbor.

Historically, commercial seafood operations have been an important economic activity in the Hampton Roads area. The fishery resources of the Chesapeake Bay were noted in the earliest historical accounts dating from the Colonial period. Today, this industry continues to be highly productive, and it supports a very significant commercial and sport-fishing harvest. Both the harvesting of finfish and shellfish in the adjacent waters of the Chesapeake Bay and the Atlantic Ocean and the processing of seafood products in adjacent cities surrounding the harbor have been and continue to be substantial operations within the area. The following table shows the amount and value of shellfish and finfish landings within the localities comprising the port in the last 5 years.



Table I-4. SHELLFISH AND FINFISH LANDINGS, 1992 TO 1998

Year	Chesapeake	Hampton	Isle of Wight	Newport News	Norfolk	Portsmouth	Suffolk	Virginia Beach	Total
<u>1992</u>									
Landed pounds (000)	3.6	12,220.8	122.8	6,742.1	1,545.5	869.8	13.6	754.9	22,272.7
Value (\$000)	5.6	15,640.0	323.6	5,684.0	1,337.4	295.8	19.9	583.5	33,889.8
<u>1993</u>									
Landed pounds (000)	249.9	9,794.2	465.5	5,576.1	2,820.9	318.4	497.2	3,484.4	23,206.6
Value (\$000)	880.0	12,804.2	383.2	10,112.0	2,156.0	224.2	370.7	1,686.1	28,616.4
<u>1994</u>									
Landed pounds (000)	46.9	9,571.4	455.0	6,123.4	1,947.2	210.4	387.9	3,053.3	21,795.5
Value (\$000)	30.7	17,087.7	437.8	13,914.6	1,483.2	140.3	403.9	1,377.5	34,875.7
<u>1995</u>									
Landed pounds (000)	12.5	9,053.8	483.3	7,101.7	1,202.4	218.7	453.7	2,593.6	21,119.7
Value (\$000)	8.9	12,809.9	546.8	17,123.2	1,077.3	149.2	407.7	1,287.7	33,410.7
<u>1996</u>									
Landed pounds (000)	93.4	8,114.5	563.4	6,161.1	1,756.8	206.5	321.7	4,164.1	21,381.5
Value (\$000)	53.5	9,191.3	594.2	15,886.0	8,333.6	162.9	292.7	2,014.1	36,528.3
<u>1997</u>									
Landed pounds (000)	95.7	8,024.1	530.5	8,224.4	1,418.6	422.1	571.9	5,190.0	24,477.3
Value (\$000)	60.8	6,989.7	595.2	15,269.8	1,148.2	347.9	481.3	2,503.9	27,396.8
<u>1998</u>									
Landed pounds (000)	62.4	8,333.1	409.2	6,669.0	497.7	473.7	451.2	7,817.1	24,713.4
Value (\$000)	34.0	8,218.2	521.9	15,997.9	405.9	365.0	404.9	4,272.8	30,220.6

Source: Virginia Marine Resources Commission.

The area is extremely rich in outdoor recreational resources due to the numerous estuaries, rivers, and bays in the vicinity. Boating, water sports, and sport fishing are frequent recreational activities enjoyed by residents and visitors. Numerous marinas provide access, harborage, and storage for thousands of recreational craft. The Southern Branch of the Elizabeth River is a portion of the Atlantic Intracoastal Waterway which connects Chesapeake Bay to the north with the sounds of North Carolina. Numerous pleasure craft use this waterway enroute between Maine and Florida. Several sightseeing tour boats are operated daily out of adjacent cities. The importance of recreational boating in the Hampton Roads area is clearly demonstrated by the increasing number of registrations over the past 17 years, as shown in the following table.

Table I-5. PLEASURE BOAT REGISTRATIONS

<u>Locality</u>	<u>Years</u>						
	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
Chesapeake	3,680	3,803	4,646	5,600	5,698	6,005	6,133
Hampton	3,090	3,203	3,985	4,188	4,198	4,286	4,360
Isle of Wight	1,014	1,230	1,580	1,929	1,905	2,070	2,061
Newport News	2,574	2,825	3,644	3,935	3,835	3,214	3,871
Norfolk	4,726	4,753	5,243	4,881	5,085	4,886	4,773
Portsmouth	1,965	2,325	2,893	3,267	3,193	3,344	3,318
Suffolk	2,118	2,347	3,083	3,215	3,872	3,214	3,237
Virginia Beach	<u>8,830</u>	<u>9,450</u>	<u>11,533</u>	<u>12,328</u>	<u>13,011</u>	<u>12,538</u>	<u>12,581</u>
Total	27,997	29,936	36,607	40,343	40,797	41,554	42,332

Source: Virginia Department of Game and Inland Fisheries.

In the vicinity of the harbor, there are numerous points of historical and recreational interest. The more notable of these include the site of the Civil War battle between the "Monitor" and "Merrimac," Fort Monroe, Fort Norfolk, Norfolk Naval Base, Norfolk Naval Shipyard, Waterside Festival Market Place, Mariners Museum, and Nauticus--The National Maritime Center. Nearby are the Virginia Beach Resort, Colonial Williamsburg, Jamestown, and Yorktown.

## **KEY FUTURE NON-CORPS OF ENGINEERS ACTIVITIES**

Discussed in this section are several of the key activities scheduled for the future that, when completed, will have significant favorable effects on port use and operations. These include a new bridge-tunnel between southside and northside Hampton Roads, a second tunnel adjacent to the existing Midtown Tunnel connecting the Cities of Norfolk and Portsmouth, and the "Virginia Port Authority 2010 Plan," which provides for the expansion and increased operational efficiencies for the Commonwealth-owned marine terminals.

### **Hampton Roads Crossing Study**

Congestion at the Hampton Roads Bridge-Tunnel along Interstate 64 has been a concern for several years. In 1992, the Virginia General Assembly passed Joint Resolution 132, which directed the Virginia Department of Transportation (VDOT) to conduct a study on the Hampton Roads Bridge-Tunnel. The VDOT study stated that short-term measures would not solve congestion at the Hampton Roads Bridge-Tunnel, and that a long-term, large-scale solution would be required.

As a result of the VDOT study, the Hampton Roads Crossing study was initiated in late 1993 as a demonstration project based on authority contained in the Intermodal Surface Transportation Efficiency Act of 1991. A Coordinating Committee for the project was formed by the VDOT, and it includes the Federal Highway Administration, Federal Transit Authority, Virginia Department of Rail and Public Transportation, VDOT, Hampton Roads Metropolitan Planning Organization, local public officials, and regulatory and environmental agency representatives, including the Norfolk District,

Army Corps of Engineers. It also includes representatives from transit commissions, rail providers, port operators, and military bases.

The study has considered various solutions, including options to construct new transportation facilities, upgrade existing roadways, and implement congestion management strategies. Initially, 45 potential solutions were considered, and this was further narrowed down to 11 transportation corridors. The Commonwealth Transportation Board, giving consideration to all aspects of the study, selected Corridor 9 as the “Locally Preferred Corridor” (see Plate 7). It is important to note that Corridor 9 provides direct access from I-664 to the Norfolk International Terminals. The actual alignment within the Locally Preferred Corridor will be determined based on additional detailed environmental and engineering analyses. In this connection, the Environmental Impact Statement (EIS) process for this project began in March 1998. The EIS addresses the environmental impacts associated with the Locally Preferred Corridor, Corridor 9. In addition, Corridor 1 and Corridor 2 are also investigated in the EIS. These two are the only corridors in the EIS that provide new crossings parallel to the existing Hampton Roads Bridge-Tunnel.

### **Midtown Tunnel and Pinners Point Interchange**

The VDOT is planning a second tube to be located in the Elizabeth River immediately adjacent to the existing Midtown Tunnel, which connects the Cities of Portsmouth and Norfolk. The tunnel is being considered for possible public-private partnership. A Final EIS for the project was completed by the Federal Highway Administration in 1996. Currently, the Midtown Tunnel project is not on the VDOT's schedule.

An associated construction project is the Pinners Point Interchange, which connects the east end of the West Norfolk Bridge (Route 164) in Portsmouth to the existing tunnel. The connector to the West Norfolk Bridge is proposed as a six-lane elevated roadway, built along the waterfront adjacent to the Port Norfolk Historic District. It will be constructed as a high level structure (bridge) located offshore from

Bayview Boulevard, and it will tie into an interchange located landward of the Portsmouth Marine Terminal. The Pinners Point Interchange and Connector are scheduled for advertisement for construction bids in spring 2000.

### **Marine Terminal Expansions**

The "Virginia Port Authority 2010 Plan," details the marketing, operations, and development plans for an integrated port-wide plan for three VPA marine terminals located in Newport News, Norfolk, and Portsmouth. The consultants, working closely with the VPA and Virginia International Terminals, assessed market opportunities and port-wide cargo handling capabilities. Each of the three marine terminals was studied, including the Virginia Inland Port in Northern Virginia. The following general findings were included in the report:

- The port has experienced substantial growth in cargo, which has been accommodated to the mid-1990's by continually increasing efficiency of operations;
- The market assessment indicates significant potential for continued growth. By 2010, should the high-end market forecast be realized, containerized cargo will increase by 250 percent (of which the intermodal volume will increase by 300 percent), and breakbulk cargo will increase by 200 percent;
- Significant improvements to existing facilities and construction of new facilities will be necessary to accommodate the potential growth in cargo. Expansion of on-terminal intermodal rail will be essential; and
- The study includes recommendations for all three terminals; however, the substantial focus of the 2010 Plan is on Norfolk International Terminals (the primary opportunity site for expansion) and the need for good intermodal rail access.

To ensure that the port is ready for the projected growth, the VPA is moving forward with its Plan 2010, which will effectively double the container-handling capacity of the Commonwealth-owned general cargo terminals at an estimated capital investment of over \$400 million. Current plans provide for the expansion of Norfolk International Terminals on an undeveloped 300-acre site located north of the existing facility. However, projected growth in general cargo is expected to quickly use up this increased capacity requiring the provision of a fourth marine cargo terminal within the port. A study is currently underway by the Corps of Engineers and the VPA assessing the potential for locating such a facility on an expanded Craney Island Dredged Material Area. This study is discussed in detail in Section III. These and other future improvements will permit the port to accommodate the 16-million-ton volume of general cargo anticipated by the year 2010. They will also place the port in a position to take advantage of new marketing opportunities in an increasingly competitive international shipping environment.

### **Virginia Intermodal Partnership Project**

The Virginia Intermodal Partnership Project addresses the need to ensure that the Port of Hampton Roads will be able to meet the demands of the projected increase in container cargo within the next decade by creating a partnered state-of-the-art intermodal transportation center for Hampton Roads. The project proposes a long-term partnership between the Department of Defense and the commercial intermodal industry. The Department of Defense would contribute the land, facilities, equipment, and partial funding, while other agencies and commercial interests would contribute other assets to create a shared resource pool. The facility would join Norfolk International Terminal, Airport Operations at the Oceana Naval Air Station, rail access through Norfolk Southern, and access to I-64, all linked within a four square mile area. The project is divided into the following three categories: (1) roads and improvements, (2) rail and improvements, and (3) port and improvements. Although there has been no comprehensive implementation plan developed to date, the project remains an important economic initiative for the region which is being developed by the Navy in cooperation with the port, the City of Norfolk, and Norfolk Southern Corporation.

## **EXISTING REQUIREMENTS AND PROCEDURES**

The following paragraphs discuss regulatory and environmental requirements and procedures, Project Cooperation Agreements, and other agencies and their involvement. Appendix D contains additional information on this subject.

### **REGULATORY**

All work in waters of the United States and wetlands require a permit from the Army Corps of Engineers. The proponent is required to submit a joint permit application form to the Virginia Marine Resources Commission. This application is assigned a number and forwarded to the Corps of Engineers and the Virginia Department of Environmental Quality (DEQ) for review. The reviews are done concurrently but are independent of one another. The Virginia Marine Resources Commission issues authorization for work channelward of mean low water (m.l.w.) in tidal systems and ordinary high water in non-tidal systems. As part of the Corps review process, the Virginia DEQ issues Virginia Water Protection Permits for the water quality impacts associated with dredging projects in Section 404 waterways. This permit serves as the Section 401 Water Quality Certificate required under the Federal Water Pollution Control Act Amendments of 1972, as amended (commonly referred to as the Clean Water Act), and it is incorporated into the Corps permit when issued.

The Corps of Engineers has authority to review proposals for work in waters of the United States and wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires approval for work in, over, and under navigable waters of the United States. Activities for which a permit is needed include dredging, piers, wharves, bulkheads, dolphins, marinas, ramps, intakes, and pipeline and utility line crossings. Section 404 of the Clean Water Act requires authorization for the placement of dredged and fill material into waters of the United States and wetlands. Activities for which authorization is needed include deposition of fill material for residential, commercial, and recreational activities; construction of revetments, groins, breakwaters, levees, dikes, and weirs; and backfill for bulkhead construction.

The Virginia Marine Resources Commission is responsible for authorization of work in subaqueous areas, tidal wetlands, and coastal primary sand dunes under Subtitle III of Title 28.2 of the Code of Virginia. The joint permit application form, developed in 1978, is submitted to the Virginia Marine Resources Commission for recording and distribution to the appropriate Federal, state, and local agencies for review and authorization.

The Tidewater Regional Office of the Virginia DEQ is responsible for implementation of the Virginia Water Protection Permit (VWPP) Program under Section 62.1-44.15:5. A VWPP is required for any project where water quality certification is necessary under Section 401 of the Clean Water Act. The VWPP ensures that the proposed activity is consistent with the protection of in-stream beneficial uses, including the protection of navigation; maintenance of waste assimilation capacity; protection of fish and wildlife resources and habitat; and protection of recreational, cultural, and aesthetic values. Any conditions that are made a part of the VWPP are also required conditions of any Corps permit authorization.

All Tidewater Virginia localities have established a local wetlands board that is responsible for the authorization of any work proposed for non vegetated shorelines between mean low and mean high water, as well as areas to one and one-half times the tidal range along shorelines with wetland vegetation present. Each locality also has specific regulations for the implementation of the Chesapeake Bay Preservation Act.

The provisions of the Rivers and Harbors Act of 1888, as amended, authorizes the Secretary of the Army to designate the Norfolk District Engineer as Supervisor of the Harbor of Hampton Roads. The Supervisor, in coordination with the Coast Guard, U.S. Department of Justice, and other Federal and state agencies, conducts a program for the prevention, detection, and prosecution of the deposits of waste, refuse, and other injurious materials into navigable waters. The jurisdiction of the Supervisor of the Harbor includes Hampton Roads, the reaches of the Chesapeake Bay and the Atlantic Ocean located in Virginia, and the tidal portion of numerous tributaries. An ancillary



authority was established by the Rivers and Harbors Act of 1899, as amended, which prohibits obstructions to navigable water such as unauthorized structures, unauthorized fill, deposit of refuse, and sinking of vessels. The direct supervision of the waters under the jurisdiction of the Norfolk District is accomplished by means of two patrol vessels, a derrickboat, and a crane barge. They perform inspections and investigate and remove sunken or abandoned vessels and navigational hazards.

## **ENVIRONMENTAL**

Among the various environmental laws and regulations that are applicable to proposed Federal actions in the harbor, the National Environmental Policy Act (NEPA) (42 United States Code 4321 et seq.) and its regulations (40 Code of Federal Regulations 1500 to 1508) are among the most important. The intent of this law is to involve and inform public officials and citizens of the environmental consequences of an action and to help public officials take actions that protect, restore, and enhance the environment. Implementation of the NEPA begins with “scoping,” a process of soliciting public and agency concerns regarding the proposed action. The next steps include developing alternatives, assessing resources in the study area, and determining the effects with project implementation. This analysis usually culminates with the preparation of either an EIS or an environmental assessment (EA). An EIS is prepared when there are significant environmental effects expected, while an EA is normally written when the impacts are not anticipated to be significant. These documents are coordinated with various agencies and individuals, and any necessary revisions made. The EIS culminates with the signing of a Record of Decision (ROD) and the EA with the Finding of No Significant Impact (FONSI) or a decision to prepare an EIS. The FONSI is a document prepared by a Federal agency briefly presenting the reasons why an action, not otherwise excluded (40 Code of Federal Regulations 1508.4), will not have a significant effect on the human environment and for which an EIS, therefore, will not be prepared.

In addition to the NEPA, there are numerous other environmental laws and regulations that require consideration. Compliance with these is often combined with the NEPA process, and the results are presented in the NEPA documents. Some of these

laws include the Clean Air Act; Clean Water Act; Coastal Zone Management Act; Endangered Species Act; and Comprehensive Environmental Response, Compensation, and Liability Act.

Compliance with environmental laws and regulations also involves compliance with various laws concerning historical resources, most notably the National Historic Preservation Act of 1966, as amended. Section 106 of this act authorizes the Advisory Council on Historic Preservation to review Federal actions to ensure that historic properties are considered during the planning and execution of such actions. This review process consists of the following steps: (1) identifying of any historic resources in the area of potential effect; (2) determining what effect the proposed action could have on the historic properties; (3) consulting with the state historic preservation officer (among others) to find ways to make the action less harmful if an adverse effect is anticipated; (4) preparing of a Memorandum of Agreement outlining the measures to be taken to mitigate the adverse effects; and (5) obtaining the comments of the Advisory Council on the agreement and the project as a whole.

## **PROJECT COOPERATION AGREEMENTS**

A Project Cooperation Agreement (PCA), formerly called a Local Cooperation Agreement, is a legally binding agreement between the Federal Government and a non-Federal entity that lists the items of local cooperation and the cost-sharing requirements necessary for the Federal Government to undertake water resources projects. PCAs are generally derived from Section 221 of the Flood Control Act of 1970, and they are sometimes referred to as "221 Agreements." Other related agreements are also utilized before or in conjunction with a PCA, such as a Feasibility Cost-Sharing Agreement or an Escrow Agreement. PCAs are also utilized in the Continuing Authorities Program, under which the Secretary of the Army, acting through the Chief of Engineers, is authorized to plan, design, and construct certain types of small water resources improvements without specific Congressional authorization of individual projects.

Over the years, several approved model PCAs and related agreements have been developed for specific types of Corps projects. These models are approved by the Headquarters, Army Corps of Engineers and the Assistant Secretary of the Army (Civil Works). Local cooperation requirements for authorized Corps projects within the Hampton Roads area are generally described in Section II. PCA-related requirements for potential projects that are currently under study and for proposed studies are shown in Section III.

## **OTHER**

In addition to requirements and procedures discussed previously, other general procedures within the harbor are required by the U.S. Department of Agriculture, Coast Guard, U.S. Customs Service, U.S. Immigration and Naturalization Service, and Virginia Department of Agriculture and Consumer Affairs.

The U.S. Department of Agriculture ensures that the quality of produce and meat entering the port meets appropriate standards. Ships are boarded at dockside on arrival, and all produce and meats in sea stores are inspected. The Department must make sure that all meats entering the United States are only from countries and establishments given prior approval for sending such meat products into this country. In cooperation with the Virginia Department of Agriculture's Grain Inspection Service, the U.S. Department of Agriculture must ensure that vessels transporting grain meet certain cleanliness standards and supervise the loading of grain for both weight and quality.

The Coast Guard generally ensures the safety, security, and environmental protection of the Port of Hampton Roads through enforcement of marine safety standards and response to environmental and military threats. The commanding officer of the Marine Safety Office serves as Captain of the Port. Major responsibilities include the following:

- Control anchorages in the harbor, except those assigned to the Navy;
- Coordinate use of naval anchorages by commercial vessels;
- Control the movement of vessel traffic in emergency situations;
- Enforce dangerous cargo, tank vessel, and load line regulations;
- Enforce regulated navigation areas throughout the port;
- Inspect and certify vessels under United States law;
- Conduct foreign vessel examinations for navigation safety, pollution prevention, marine sanitation devices, and compliance with United States and international law; and
- Examine commercial fishing vessels for compliance with Federal regulations.

The U.S. Customs Service ensures that vessels arriving from a foreign port follow appropriate procedures for entry into the country, prior to transacting business. The U.S. Immigration Service makes sure that proper procedures are followed on all vessels arriving in the port from foreign countries.

## **HISTORICAL RECORDS AND DATA SOURCES**

### **PURPOSE**

This section provides the identification and location of relevant port-related resource material that is currently on file at a number of agencies involved in port operations. This resource material includes reports, publications, studies, authorizations, programs, services, surveys, data records, photographs, etc., that may be useful to port interests. Since most of this material is much too voluminous to be included in the Plan,

just a short description of the material has been provided. Should the reader desire more detailed information, a point of contact has also been provided. This inventory is presented as a centralized, one-stop reference for finding various data sources to assist in research, analysis, and decision making.

## **METHODOLOGY**

All port interests associated with the use and development of Hampton Roads harbor were contacted to determine if they maintained any port-related resource material that may be of potential interest to port users. A comprehensive survey was conducted through correspondence, telephone interviews, and personal contact. For each data source identified, respondents provided a brief description of the information, where and how it is currently maintained, and a point of contact for obtaining further details. As part of the comprehensive Plan, the data listings will be periodically updated to include pertinent future information and to ensure that it does not become obsolete.

## **SUMMARY**

The following table summarizes the data sources identified from the survey, and it includes the name of the responding agency, a descriptive title of the data/information, and a point of contact for further details. A more comprehensive description of the data is contained in Appendix E.

Table I-6. HISTORICAL RECORDS AND DATA SOURCES

Agency	Descriptive title	Point of contact	
		Name	Telephone
• National Oceanic and Atmospheric Administration	• Hydrographic Data in the Marine Environment	LCDR Andrew Beaver	(757) 441-6746
	• Oceanographic Observing Systems	Jim Dixon	(757) 436-0200
	• National Spatial Reference System	Joe Lindsay	(757) 441-3603
	• Scientific Support During Spills	Gary Ott	(757) 898-2234
• U.S. Army Corps of Engineers	• Rivers and Harbors Congressional Documents	Lane Killam	(757) 441-7562
	• Annual Reports of the Corps of Engineers	Lane Killam	(757) 441-7562
	• Waterborne Commerce of the United States	Lane Killam	(757) 441-7562
	• Tide Tables and Tidal Current Tables	Lane Killam	(757) 441-7562
	• Various Studies, Reports, and Authorizations	Lane Killam	(757) 441-7562
	• Project Map Files	Richard L. Klein	(757) 441-7243
	• Dredging Schedules	Richard L. Klein	(757) 441-7243
	• National Environmental Policy Act Documents	Thomas McCarthy	(757) 441-7028
	• Cultural Resource Reports	Helene Haluska	(757) 441-7008
	• Regulatory Branch Permit Database	Craig Jones	(757) 441-7070
	• Regulatory Branch Permit Records	Susan Schrader	(757) 441-7652
	• Aerial Photographs	Willie Ricks/ John Evans	(757) 441-7580 (757) 441-7794

Table I-6. HISTORICAL RECORDS AND DATA SOURCES  
(Cont'd)

<u>Agency</u>	<u>Descriptive title</u>	<u>Point of contact</u>	
		<u>Name</u>	<u>Telephone</u>
• U.S. Army Corps of Engineers (cont'd)	• Dredging Report of Operations	Tom Friberg	(757) 441-7645
	• Craney Island Dredged Material Database	Tom Friberg	(757) 441-7645
	• Real Estate Management Information System	Robert P. Turner/ Dillard H. Horton	(757) 441-7733 (757) 441-7735
	• Real Estate Project Maps	Robert P. Turner/ Dillard H. Horton	(757) 441-7733 (757) 441-7735
	• Real Estate Historical Files	Robert P. Turner/ Dillard H. Horton	(757) 441-7733 (757) 441-7735
	• Real Estate Project Cooperation Agreement Files	Robert P. Turner/ Dillard H. Horton	(757) 441-7733 (757) 441-7735
	• Real Estate Defense Environmental Restoration Files	Robert P. Turner/ Dillard H. Horton	(757) 441-7733 (757) 441-7735
• U.S. Maritime Administration	• Various Reports: General; Fleet and Vessel Management Systems, Planning, and Technology; Labor, Training, and Safety; Personnel and Training, and Port and Intermodal Development	L. Frank Mach	(757) 441-6393
• U.S. Navy	• October 1992 Condition Survey	Al Siegler	(757) 462-4733
	• April 1995 Condition Survey	Al Siegler	(757) 462-4733

Table I-6. HISTORICAL RECORDS AND DATA SOURCES  
(Cont'd)

<u>Agency</u>	<u>Descriptive title</u>	<u>Point of contact</u>	
		<u>Name</u>	<u>Telephone</u>
• U.S. Navy (cont'd)	• June 1996 Condition Survey	Al Siegler	(757) 462-4733
	• Spring 1998 Condition Survey	Al Siegler	(757) 462-4733
	• Military Construction Project P-100	Al Siegler	(757) 462-4733
	• Environmental Assessment for Military Construction Project P-100	M. Connor	(757) 464-7063
	• Initial Assessment Study of NAB LCREEK (NEESA 13-066)	K. Greaser	(757) 462-4571
	• History of Harbor Dredging Events	Al Siegler	(757) 462-4733
	• NAVPHIBASE LCREEK Dredging History of 1995	Al Siegler	(757) 462-4733
	• Hydrographic Surveys	Frank Cole	(757) 444-3765
	• Hydrographic Surveys	Chris Ceniccola	(757) 396-8240
• Virginia Department of Environmental Quality	• Water Quality Monitoring and Water Quality Assessments	Roger Everton	(757) 518-2150
		Kevin A. Curling	(757) 518-2155
	• Virginia Water Protection Permits	Robert F. Jackson	(757) 518-2113
	• Point Source Control Programs	Bob Goode	(757) 518-2110
	• Groundwater Protection Programs	Dave Borton	(757) 518-2118
	• Solid and Hazardous Waste Program	Harold Winer	(757) 518-2153
	• Air Pollution Control Program	Jane Workman	(757) 518-2112
	• Pollution Response Program	Kerita Kegler	(757) 518-2180



Table I-6. HISTORICAL RECORDS AND DATA SOURCES  
(Cont'd)

<u>Agency</u>	<u>Descriptive title</u>	<u>Point of contact</u>	
		<u>Name</u>	<u>Telephone</u>
• Virginia Department of Historic Resources	• Archaeological and Historical Site Files	Suzanne Durham	(804) 367-2323 extension 124
• Virginia Institute of Marine Science	• Biotoxicity	Morris H. Roberts	(804) 684-7260
	• Commercial Shellfish, Finfish, Benthic Organisms	Roger L. Mann/ Robert J. Diaz	(804) 684-7360 (804) 684-7364
	• Contaminants in Sediments	Mike Unger	(804) 684-7187
	• Effects of Dredging	John D. Boon	(804) 684-7272
	• Estuarine Circulation, Observations, and Modeling	Harry V. Wang	(804) 684-7215
	• Storm Surge	John D. Boon	(804) 684-7272
	• Water Quality Monitoring and Modeling	Albert Y. Kuo	(804) 684-7212
	• Waves	John D. Boon	(804) 684-7272
• Virginia Marine Resources Commission	• Conservation and Replenishment Division Information	Jim Wesson	(757) 247-2200
	• Engineering/Surveying Department Shellfish Lease Information	Gerry Showalter	(757) 247-2200
	• Fisheries Management Division, Plans and Statistics Department Information	Roy Insley	(757) 247-2200
	• Individual Habitat Management Division Permit Files	Tony Watkinson	(757) 247-2200

Table I-6. HISTORICAL RECORDS AND DATA SOURCES  
(Cont'd)

<u>Agency</u>	<u>Descriptive title</u>	<u>Point of contact</u>	
		<u>Name</u>	<u>Telephone</u>
• Virginia Port Authority	• Craney Island Study Committee Report	Neal T. Wright	(757) 683-2150
	• 2010 Plan	Neal T. Wright	(757) 683-2150
	• 2020 Plan	Neal T. Wright	(757) 683-2150
• Hampton Roads Planning District Commission	• Hampton Roads Data Book	John W. Whaley	(757) 420-8300
	• Regional Shoreline Study	John M. Carlock	(757) 420-8300
	• Managing Multiple Recreational Use Conflicts in the Waters of Hampton Roads	John M. Carlock	(757) 420-8300
	• Third Crossing Study	Dwight L. Farmer/ John Crosby	(757) 420-8300 (757) 420-8300
	• Aerial Photography	Robert C. Jacobs	(757) 420-8300
• City of Norfolk	• Geographical Information System Bureau	Charles M. Ragland	(757) 664-4500
• City of Virginia Beach	• City Data Sheet	Janet Simons	(757) 437-6464

## **COORDINATION PROCESS**

This section discusses the manner in which coordination is conducted with the many and varied stakeholders involved in the development of the Plan. In order to develop an integrated and comprehensive plan, it is important to obtain the input and perspective of a wide variety of port interests. Over 400 stakeholders were involved in preparing the Plan, including Federal, state, regional, and local government agencies; large and small port-related businesses; professional groups; environmental organizations; and local universities. A topical, alphabetical list of stakeholders is included in Appendix F, and it contains a point of contact and address.

### **CIRCLES OF INFLUENCE**

The importance of the stakeholder's participation in developing and maintaining this Plan cannot be overemphasized. It is essential for a successful effort. Because there are so many port users, the coordination process is based on "circles of influence," which is a tiered approach that divides stakeholders into specific groups based on their degree of responsibility with respect to their participation in the development and review of the Plan. Picture the rings formed when a rock is thrown into a pond. The innermost circle is Circle "A," the next ring is Circle "B," and so on. Each successive circle contains all the interior circles. The Circle "A" stakeholders listed in the following table were the principal advisors during the 3-year period the Plan was being formulated. They also reviewed and approved the Plan. In addition, these stakeholders have the responsibility of updating the Plan periodically--every 3 to 5 years--to ensure that the information contained therein remains viable and useful. Circle "B" stakeholders are substantially involved but to a lesser degree than Circle "A." They provide crucial information concerning the navigation needs of the port. These stakeholders, who were consulted through correspondence, personal interviews, and meetings, are listed in a subsequent section of this segment. Circle "C" stakeholders include all of the others who have some connection and interest in the Plan. These stakeholders were consulted primarily via correspondence during the 3-year period of development, and this is the group that is listed in Appendix F.

Table I-7. CIRCLE "A" STAKEHOLDERS

Name	Point of Contact	Title	Address	Telephone Number
• National Oceanic and Atmospheric Administration	LCDR Andrew Beaver	Chief, Atlantic Hydrographic Branch	439 West York Street Norfolk, VA 23510-1114	(757) 441-6746
• U.S. Army Corps of Engineers	Thomas J. Lochen	NMP Technical Team Leader	Planning Division 803 Front Street Norfolk, VA 23510	(757) 441-7539
	AND			
	Richard L. Klein	Operations Manager, Norfolk Harbor Maintenance	Engineering Division 803 Front Street Norfolk, VA 23510	(757) 441-7243
• U.S. Coast Guard	CAPT John Schrinner	Captain of the Port	Marine Safety Office Suite 700 200 Granby Street Norfolk, VA 23510	(757) 441-3302
	POCs:			
	LTJG Connie Rooke	Planning & Preparedness Staff	Marine Safety Office Suite 700 200 Granby Street Norfolk, VA 23510	(757) 441-3453
	AND			
	John R. Walters	Chief, Waterways Management Section	Commander (AOWW) U.S. Coast Guard Atlantic Area 431 Crawford Street Portsmouth, VA 23704	(757) 398-6230

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• U.S. Fish and Wildlife Service	William M. Hester	Fish and Wildlife Biologist	6669 Short Lane Gloucester, VA 23061	(804) 693-6694
• U.S. Maritime Administration	L. Frank Mach	Region Maritime Programs	Room 211, Building 4D 7737 Hampton Boulevard Norfolk, VA 23505	(757) 441-6393
	ALTERNATE:			
	Willie Barnes	Region Environmental Programs	Room 211, Building 4D 7737 Hampton Boulevard Norfolk, VA 23505	(757) 441-6393
• U.S. Military Sealift Command	Rick Caldwell	Marine Transportation Specialist, Fleet Operations	Military Sealift Command Atlantic 1966 Morris Street Norfolk, VA 23511-3496	(757) 443-5641
• U.S. Navy	RADM Christopher Cole	Commander	Navy Region, Mid Atlantic Building A 6506 Hampton Boulevard Norfolk, VA 23508-1273	(757) 322-2800
	POC:			
	Ray K. Kirby	Deputy	Regional Engineer Command Code 50 9742 Maryland Avenue Norfolk, VA 23511-3095	(757) 322-2871

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Virginia Department of Environmental Quality	Robert F. Jackson, Jr.	Environmental Manager, Planning and Permit Support	Tidewater Regional Office 5636 Southern Boulevard Virginia Beach, VA 23462	(757) 518-2113
	ALTERNATE:			
	Kevin A. Curling	Environmental Engineer, Planning and Permit Support	Tidewater Regional Office 5636 Southern Boulevard Virginia Beach, VA 23462	(757) 518-2155
• Virginia Marine Resources Commission	Robert Grabb	Chief, Habitat Management Division	2600 Washington Avenue Newport News, VA 23607	(757) 247-2250
• Virginia Port Authority	Robert R. Merhige, III	General Counsel and Deputy Executive Director	600 World Trade Center Norfolk, VA 23510	(757) 683-2107
• Hampton Roads Planning District Commission	John M. Carlock	Deputy Executive Director for Physical Planning	723 Woodlake Drive Chesapeake, VA 23320	(757) 420-8300
• Municipal Government, Northside	Robert G. Bates	Port Development Administrator and Harbor Master	Department of Planning and Development City of Newport News 2400 Washington Avenue Newport News, VA 23607	(757) 247-8437
• Municipal Government, Southside	G. Timothy Oksman	City Attorney	Portsmouth City Hall 801 Crawford Street Portsmouth, VA 23704	(757) 393-8731

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Academic Institution of Higher Learning	Dr. John D. Boon	Professor of Marine Science	Department of Physical Sciences Virginia Institute of Marine Science Greate Road, Route 1208 Gloucester Pt., VA 23062	(804) 684-7272
• Craney Island Study Commission	George E. Watkins	Member	4301 Hatton Point Road Portsmouth, VA 23703	(757) 484-4040
• Dredging/Construction Company	T.J. Wright	President	Wright Dredging Company 9584 Bear Trap Circle Windsor, VA 23487	(757) 242-4800
• Hampton Roads Maritime Association	J.J. Keever	Executive Vice President	236 East Plume Street Norfolk, VA 23510	(757) 622-2639
• Railroad Company	Robert E. Martinez	Assistant Vice President, Marketing	Norfolk Southern Corp. Three Commercial Place Norfolk, VA 23510-9206	(757) 629-2748
• Recreation Interest	Steve Phillips	Member, Hampton Roads Recreational Safe Boating Coalition	Boating Safety Specialist U.S. Coast Guard 431 Crawford Street Portsmouth, VA 23704	(757) 398-6204

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
Recreation Interest (cont'd)	ALTERNATE:			
	Joy J. Sullivan	Member, Hampton Roads Recreational Safe Boating Coalition	Drive Smart Consultant 261 Overholt Drive Virginia Beach, VA 23462	(757) 490-8961
• Ship Agent and Broker	David Host	Executive Vice President	T. Parker Host, Incorporated Suite 820 World Trade Center Norfolk, VA 23510	(757) 627-6286
• Ship Repair Interest, Major	J. Douglas Forrest	Vice President	Colonna's Shipyard, Inc. 400 East Indian River Road Norfolk, VA 23523	(757) 545-2414
• Ship Repair Interest, Minor	Patrick A. Yaccarino	Operations Manager	Bay Diesel Corporation 3736 Cook Boulevard Chesapeake, VA 23323-1604	(757) 485-0075
• Terminal, Coal	Charles E. Brinley	President and Chief Operating Officer	Dominion Terminal Associates Harbor Road, Pier 11 Newport News, VA 23607	(757) 245-2275
	ALTERNATE:			
	Stephen A. Wylie	Manager, Production and Quality Control	Dominion Terminal Associates Harbor Road, Pier 11 Newport News, VA 23607	(757) 245-2275 (extension 314)



Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Terminal, Other Than Container and Coal	Phil Stedfast	Manager, Customer Relations	Elizabeth River Terminals, Incorporated 4100 Buell Street Chesapeake, VA 23324	(757) 543-0335 (extension 16)
• Trucking Company	Shirley Roebuck	Terminal Manager	Marine Freight Company, Incorporated 400 Lee Avenue Portsmouth, VA 23707	(757) 398-0679
• Tug Company	Paul Horsboll	Vice President and General Manager	Moran Towing of Virginia, Incorporated 1901 Brown Avenue Norfolk, VA 23504	(757) 625-6000
• Virginia Pilot Association	J. William Cofer	President	3329 Shore Drive Virginia Beach, VA 23451	(757) 496-0995
• Warehouse Company	Fred Schultz	General Manager	Norfolk Warehouse Distribution Centers, Incorporated 6969 Tidewater Drive Norfolk, VA 23509	(757) 857-6081

## **WORKSHOPS AND MEETINGS**

Three formal workshops were held at key points during the development of the Plan to facilitate effective input and reviews. The first workshop was conducted in October 1997. Its primary purpose was to obtain input from attendees regarding problems, needs, concerns, and opportunities related to the use and development of the port. The second workshop was conducted in June 1998 to obtain comments on the preliminary work completed to this point--primarily the review by attendees of the identified problems, needs, concerns, and opportunities and the prioritization criteria. The workshop also provided a forum for completing the selection of Circle "A" members. On November 17, 1999, a third and final workshop meeting was conducted to present the final Plan as reviewed and approved by the Circle "A" members. An extensive period between the last two workshops was devoted to preparing and reviewing the draft Plan. In addition to the workshop meetings, numerous informal discussions were conducted throughout the study with Circle "A" stakeholders to ensure that the development of the Plan was accurately reflecting the desires and objectives of key port interests within the Hampton Roads area. The notes of these three workshops are included in Appendix G.

## **RECOGNITION**

While all 400 plus stakeholders were periodically advised of the Plan's status over the 3-year period of development, not all were active participants. However, about 70 stakeholders were directly involved in identifying and prioritizing the problems, needs, concerns, and opportunities associated with the use and development of the port through personal interviews, meetings, and/or correspondence. The following is a listing of stakeholders who provided pertinent information during the development of the Plan:

- Atlantic Wood/Metrocast
- Atlantic Yacht Basin
- Bay Diesel Corporation
- Capes Shipping Agencies, Incorporated
- Cargill, Incorporated
- CASRM

- City of Chesapeake
- City of Hampton
- City of Newport News
- City of Norfolk
- City of Portsmouth
- City of Suffolk
- City of Virginia Beach
- Colonna's Shipyard, Incorporated
- Craney Island Study Commission
- CSX Transportation
- Davis Grain Corporation
- Dominion Terminal Associates
- Dreadnought Marine, Incorporated
- Elizabeth River Terminals, Incorporated
- Federal Marine Terminals (Richmond), Incorporated
- Hampton Roads Maritime Association
- Hampton Roads Planning District Commission
- Hampton Roads Recreational Safe Boating Coalition
- Hapag-Lloyd (America), Incorporated
- Harbor Tours, Incorporated
- T. Parker Host, Incorporated
- Huntsman Corporation
- Isle of Wight County
- Frank L. Jordan Corporation
- Kanak, Limited
- Lyon Shipyard, Incorporated
- Marine Engineers Benefits Association
- Marine Freight Company, Incorporated
- McAllister Towing Company of Virginia, Incorporated
- Moran Towing of Virginia, Incorporated

- National Oceanic and Atmospheric Administration
- Norfolk Boat, Incorporated
- Norfolk Dredging Company
- Norfolk Southern Corporation
- Norfolk State University
- Norfolk Warehouse Distribution Centers, Incorporated
- Old Dominion University
- Southgate Corporation
- W. M. Stone and Company, Incorporated
- Tarmac America, Incorporated
- Tidewater Construction Corporation
- Tidewater Yacht Marina
- United Services Automobile Association
- United States Gypsum Company
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Maritime Administration
- U.S. Military Sealift Command
- U.S. Navy
- Virginia B.A.S.S. Chapter Federation
- Virginia Chamber of Commerce
- Virginia Department of Business Assistance
- Virginia Department of Environmental Quality
- Virginia Department of Game and Inland Fisheries
- Virginia Department of Historical Resources
- Virginia Institute of Marine Science
- Virginia Marine Resources Commission
- Virginia Pilot Association
- Virginia Port Authority
- Virginia Power Company

- Wilhelmsen Lines (USA), Incorporated
- Wright Dredging Company

### **PERIODIC UPDATING PROCEDURE**

The purpose of this section is to discuss the procedure for accomplishing the periodic updating of the Plan, including the methodology for adding current pertinent data to ensure information in the Plan remains viable and useful in the future. It is important for the viability of the Plan that none of its elements or concepts are overcome by time and events and, therefore, rendered obsolete. Obviously, some aspects of the Plan are more conducive to changes and will require more frequent and extensive revisions and additions. The historical records and data sources section, for example, will need regular updating as new sources of information become available and points of contact continually change over time. Also, new and/or modified projects and other developments, as they occur in the port, will require the consistent and timely review and update of the Plan to reflect the most recent conditions.

Subject to the availability of funds, it is proposed that the Plan be completely reviewed and updated, as appropriate, every 5 to 6 years and that an abbreviated review be conducted every 2 to 3 years, primarily to ensure that the listed points of contact and other rapidly changing information are as accurate as possible. This will also maintain the integrity of the Plan by providing relatively current data and information with an acceptable investment of time and resources. Through this procedure, the Plan will retain its applicability to the port and will remain a valuable and useful tool for both port users and agencies with port-related duties and responsibilities.

## **SECTION II**

# **POST-AUTHORIZATION CORPS OF ENGINEERS PROJECTS**

---

## **SECTION II**

### **POST-AUTHORIZATION CORPS OF ENGINEERS PROJECTS**

---

#### **GENERAL**

This section of the Plan discusses the Federally-authorized Corps of Engineers navigation projects located in the Port of Hampton Roads and vicinity. There are many projects of various sizes in this area; however, the primary one is known collectively as the Norfolk Harbor and Channels project, which is a series of deep-draft channels, shallow-draft side channels, anchorages, and a dredged material placement area. For the purposes of this Plan, the Norfolk Harbor and Channels project is divided into two sections: (1) The Inner Harbor, which refers to that portion west of the Hampton Roads Bridge-Tunnel, and (2) the Outer Harbor, which refers to that portion east of the Hampton Roads Bridge-Tunnel. The Inner Harbor includes the Channel to Newport News project and the Norfolk Harbor project (the Norfolk Harbor Channel; the Elizabeth River Channel; the Southern, Eastern, and Western Branches of the Elizabeth River; Scotts Creek; various anchorages; and the Craney Island Dredged Material Area). The Outer Harbor includes the Thimble Shoal Channel in the Chesapeake Bay and the Atlantic Ocean Channel east of Virginia Beach. The remaining projects include several shallow-draft channels and two offshore dredged material placement areas. Please reference Plates 1 to 6 and Appendix E, Tables E-1, E-2, and E-3.

Discussions of the Corps of Engineers navigation projects in the port area are divided into two subsections: (1) Those projects or elements thereof that are authorized and constructed and (2) those project elements that are authorized but not yet constructed. These discussions provide a summary of pertinent information associated with each project. The following table gives an overview of these post-authorization Corps of Engineers' projects.

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS (1)

Project	Authorized	Constructed	Not yet constructed
Atlantic Ocean Channel	<ul style="list-style-type: none"> <li>• 57' depth; 1,000' width; 11.1-mile length in Atlantic Ocean off Virginia Beach. Subsequently, advanced engineering and design recommended 60' depth; 1,300' width; 11.1-mile length.</li> </ul>	<ul style="list-style-type: none"> <li>(• Naturally over 50' depth over its 11.1-mile length; channel marked with 1,300' width.)</li> </ul>	<ul style="list-style-type: none"> <li>• 60' depth; 1,300' width; 11.1-mile length.</li> </ul>
Thimble Shoal Channel	<ul style="list-style-type: none"> <li>• 55' depth; 1,000' width; 13.4-mile length from entrance to Chesapeake Bay at Cape Henry westward to a point near Old Point Comfort.</li> </ul>	<ul style="list-style-type: none"> <li>• Outbound element: 50' depth; 650' width.</li> <li>• Remaining 350' width maintained at 45' depth.</li> </ul>	<ul style="list-style-type: none"> <li>• Inbound element: 50' depth; 350' width. (2)</li> <li>• 55' depth; 1,000' width.</li> </ul>
<u>Norfolk Harbor Project:</u> <ul style="list-style-type: none"> <li>• Norfolk Harbor Channel</li> </ul>	<ul style="list-style-type: none"> <li>• Entrance Reach: 55' depth; 1,500' width; 2.0-mile length from I-64 Bridge-Tunnel westward to junction with Channel to Newport News. Subsequently, advanced engineering and design recommended 1,000' width.</li> </ul>	<ul style="list-style-type: none"> <li>• 50' depth; 1,000' width.</li> </ul>	<ul style="list-style-type: none"> <li>• 55' depth; 1,000' width.</li> </ul>



Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
<ul style="list-style-type: none"> <li>Norfolk Harbor Channel (cont'd)</li> </ul>	<ul style="list-style-type: none"> <li>Norfolk Harbor Reach: 55' depth; 1,500' width; 4.3-mile length from junction with Channel to Newport News southward to Norfolk International Terminal. Subsequently, advanced engineering and design recommended 1,000' width.</li> <li>Craney Island Reach: 55' depth; 800' width; 2.6-mile length from Norfolk International Terminal southward to Lamberts Point.</li> </ul>	<ul style="list-style-type: none"> <li>Outbound element: 50' depth; 650' width.</li> <li>Remaining 350' width maintained at 45' depth; additional 250' width maintained at 45' depth under previous authorization. Total 600' width.</li> <li>First 4,000' downstream from Lamberts Point 50' depth; full 800' width to provide maneuvering area.</li> <li>Remaining portion of outbound element: 50' depth; 650' width; remaining 150' width maintained at 45' depth.</li> </ul>	<ul style="list-style-type: none"> <li>Inbound element: 50' depth; 350' width. (2)</li> <li>55' depth; 1,000' width.</li> <li>Remaining portion of full-width channel: 50' depth; 150' width.</li> <li>55' depth; 800' width.</li> </ul>
<ul style="list-style-type: none"> <li>Elizabeth River Channel</li> </ul>	<ul style="list-style-type: none"> <li>Port Norfolk Reach and Town Point Reach: 45' depth; 750' width; 3.0-mile length from Lamberts Point to junction of Eastern Branch Channel and Southern Branch Channel.</li> </ul>	<ul style="list-style-type: none"> <li>40' depth; 750' width.</li> </ul>	<ul style="list-style-type: none"> <li>45' depth; 750' width.</li> </ul>

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS

(Cont'd)

Project	Authorized	Constructed	Not yet constructed
<ul style="list-style-type: none"> <li>Southern Branch of Elizabeth River</li> </ul>	<ul style="list-style-type: none"> <li>Lower Reach: 45' depth; 450' width; 2.0-mile length from junction with Eastern Branch Channel to Norfolk and Portsmouth Belt Line Railroad bridge.</li> <li>Middle Reach: 45' depth; 375' width; 1.0-mile length from Norfolk and Portsmouth Belt Line Railroad bridge upstream to Norfolk Southern Railroad bridge.</li> <li>Upper Reach: <ul style="list-style-type: none"> <li>40' depth; 250' to 500' width; 2.4-mile length from Norfolk Southern Railroad bridge upstream to Gilmerton Bridge.</li> <li>35' depth; 300' width; 0.6-mile length from Gilmerton Bridge upstream. Thence 250' width; 1.5-mile length upstream to end of project at a point 0.8 mile above I-64 highway bridge. Total 2.1-mile length.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>40' depth; 450' width.</li> <li>40' depth; 375' width.</li> <li>35' depth; 250' to 500' width.</li> <li>Authorized project constructed; however, upstreammost portion of channel with 250' width will be maintained at 25' depth.</li> </ul>	<ul style="list-style-type: none"> <li>45' depth; 450' width.</li> <li>45' depth; 375' width.</li> <li>40' depth; 250' to 500' width.</li> </ul>

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS

(Cont'd)

Project	Authorized	Constructed	Not yet constructed
<ul style="list-style-type: none"> <li>Southern Branch of Elizabeth River (cont'd)</li> </ul>	<ul style="list-style-type: none"> <li>Approach and turning basin opposite Norfolk Naval Shipyard, just downstream of Norfolk and Portsmouth Belt Line Railroad bridge; 45' depth; 450' to 830' width; 2,900' length.</li> <li>Turning basin at mouth of St. Julians Creek; 40' depth; 800' width; 400' to 600' length.</li> <li>Turning basin at mouth of Milldam Creek, just downstream of Gilmerton Bridge; 40' depth; 800' square.</li> <li>Turning basin at mouth of Newton Creek; 35' depth; 600' square.</li> <li>Turning basin at mouth of Mains Creek near upstream end of project; 35' depth; 800' square.</li> </ul>	<ul style="list-style-type: none"> <li>40' depth; 450' to 830' width; 2,900' length.</li> <li>35' depth; 800' width; 400' to 600' length.</li> <li>Authorized project constructed.</li> <li>Authorized project constructed; will be maintained at 25' depth.</li> </ul>	<ul style="list-style-type: none"> <li>45' depth; 450' to 830' width; 2,900' length.</li> <li>40' depth; 800' width; 400' to 600' length.</li> <li>40' depth; 800' square.</li> </ul>
<ul style="list-style-type: none"> <li>Eastern Branch of Elizabeth River</li> </ul>	<ul style="list-style-type: none"> <li>25' depth; 500' width; 1.1-mile length from junction with Southern Branch Channel to Norfolk Southern Railroad bridge.</li> </ul>	<ul style="list-style-type: none"> <li>Authorized project constructed.</li> </ul>	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
<ul style="list-style-type: none"> <li>• Eastern Branch of Elizabeth River (cont'd)</li> </ul>	<ul style="list-style-type: none"> <li>• 25' depth; 300' width; 0.5-mile length from Norfolk Southern Railroad bridge upstream to Campostella Bridge.</li> <li>• 25' depth; 200' width; 0.9-mile length from Campostella Bridge upstream to end of project at second Norfolk Southern Railroad bridge.</li> <li>• Turning basin near upstream end of project; 25' depth; 5.5 acres in area.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> <li>• Authorized project constructed; however, it is no longer maintained.</li> <li>• Authorized project constructed.</li> </ul>	
<ul style="list-style-type: none"> <li>• Western Branch of Elizabeth River</li> </ul>	<ul style="list-style-type: none"> <li>• 24' depth; 300' width; 0.8-mile length connecting from main Elizabeth River Channel. Thence 200' width; 0.4-mile length to a point downstream of West Norfolk Bridge. Total 1.2-mile length.</li> <li>• 18' depth; 150' width; 0.6 mile length from a point downstream of West Norfolk Bridge upstream to end of project at a point 0.3 mile upstream of West Norfolk Bridge.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, an 18' depth is now maintained.</li> <li>• Authorized project constructed.</li> </ul>	
<ul style="list-style-type: none"> <li>• Scotts Creek</li> </ul>	<ul style="list-style-type: none"> <li>• 12' depth; 100' width; 0.7-mile length connecting from main Elizabeth River Channel into creek.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, it is no longer maintained.</li> </ul>	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
<ul style="list-style-type: none"> <li>• Anchorages</li> </ul>	<ul style="list-style-type: none"> <li>• 3 fixed mooring anchorages just west of I-64 Bridge-Tunnel; 55' depth. Subsequently, advanced engineering and design recommended one anchorage (F); 55' depth; 1,500' swinging radius. (3)</li> <li>• 2 anchorages opposite Sewells Point; 45' depth; easternmost (K-1) 1,200' swinging radius and westernmost (K-2) 1,200' swinging radius. Subsequently, advanced engineering and design recommended enlarging the K-1 anchorage to 45' depth; 1,500' swinging radius. (3)</li> <li>• 3 anchorages opposite Lamberts Point in 173-acre area (P) on west side of 55' depth channel; 38' depth and 1,500' square; 35' depth and 1,500' square; 20' depth, 1,000' width, 3,000' length. (3)</li> <li>• 45-acre anchorage near Pinnars Point (R); 12' depth. (3)</li> </ul>	<ul style="list-style-type: none"> <li>• Anchorage F: 50' depth; 1,500' swinging radius.</li> <li>• Easternmost anchorage: 45' depth; 1,200' swinging radius.</li> <li>• Westernmost anchorage: 40' depth; 1,200' swinging radius.</li> <li>• Authorized project constructed; however, it is no longer maintained.</li> <li>• Authorized project constructed; however, it is no longer maintained.</li> </ul>	<ul style="list-style-type: none"> <li>• 55' depth; 1,500' swinging radius.</li> <li>• Easternmost anchorage: 45' depth; 1,500' swinging radius.</li> <li>• Westernmost anchorage: 45' depth; 1,200' swinging radius; however, construction has been deferred.</li> </ul>

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS

(Cont'd)

Project	Authorized	Constructed	Not yet constructed
• Craney Island Dredged Material Area	• 2,500-acre diked dredged material placement area located in Portsmouth; rehandling basin with approach and exit channels connecting rehandling basin to Craney Island Reach of Norfolk Harbor Channel.	• Authorized project constructed; currently being intensively managed under authority of Section 148 of Water Resources Development Act of 1976 (Public Law 94-587).	
Channel to Newport News	<ul style="list-style-type: none"> <li>• 55' depth; 800' width; 6.0-mile length connecting from Norfolk Harbor Channel to coal terminals in Newport News.</li> <li>• 2 anchorages (I-1 and I-2); 45' depth; 1,200' swinging radius each. (3)</li> </ul>	<ul style="list-style-type: none"> <li>• 50' depth; 800' width.</li> <li>• 40' depth; 1,200' swinging radius each.</li> </ul>	<ul style="list-style-type: none"> <li>• 55' depth; 800' width.</li> <li>• 45' depth; 1,200' swinging radius each; however, construction has been deferred.</li> </ul>
<u>Atlantic Intracoastal Waterway:</u> • General	• Extends from Massachusetts to Florida; coming south, it passes through Hampton Roads and down Southern Branch of Elizabeth River and splits into two routes.		

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS

(Cont'd)

Project	Authorized	Constructed	Not yet constructed
• Albemarle and Chesapeake Canal Route	• 12' depth; 90' width in land cuts and 125' to 250' width in rivers; tidal guard lock at Great Bridge.	• Authorized project constructed.	
• Dismal Swamp Canal Route	• 10' depth; 100' width in Deep Creek; tidal guard lock at Deep Creek.	• Authorized project constructed; however, a 6' depth project is now maintained.	
Lynnhaven Inlet	<ul style="list-style-type: none"> <li>• 10' depth; 150' width; 1.0-mile length from Chesapeake Bay into inlet to Lesner Bridge.</li> <li>• Mooring area and turning basin just upstream from Lesner Bridge; 10' depth; 700' width; 1,250' length.</li> <li>• 9' depth; 90' width; 2.0-mile length from turning basin to Broad Bay via Long Creek-Broad Bay canal.</li> <li>• 6' depth; 90' width; 0.5-mile length through The Narrows connecting Broad and Linkhorn Bays.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> </ul>	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS

(Cont'd)

Project	Authorized	Constructed	Not yet constructed
Lynnhaven Inlet (cont'd)	<ul style="list-style-type: none"> <li>• 8' depth; 100' width; 0.3-mile length side channel connecting into Long Creek.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> </ul>	
Little River (Creek)	<ul style="list-style-type: none"> <li>• 20' depth; 400' width; 1.4-mile length from Chesapeake Bay into inlet to basin.</li> <li>• Turning basin adjacent to railroad terminals; 20' depth; 400' to 1,240' width; 1,160' length.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, it is maintained by the Navy.</li> <li>• Authorized project constructed; however, it is maintained by the Navy.</li> </ul>	
Willoughby Channel	<ul style="list-style-type: none"> <li>• 10' depth; 300' width; 1.5-mile length from Hampton Roads to a point near tip of Willoughby Spit in Willoughby Bay.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, a 6' depth; 200' width project is now maintained.</li> </ul>	
<u>Lafayette River:</u>			
<ul style="list-style-type: none"> <li>• Main channel</li> </ul>	<ul style="list-style-type: none"> <li>• 8' depth; 100' width; 1.7-mile length from Hampton Roads to Hampton Boulevard Bridge.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> </ul>	



Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
• Main channel (cont'd)	• 6' depth; 100' width; 2.3-mile length from Hampton Boulevard Bridge upstream to a point opposite East Haven Creek.	• Authorized project constructed.	
• Knitting Mill Creek	• 6' depth; 40 ' to 80' width; 0.6-mile length connecting from Lafayette River Channel into creek to settling basin (8' depth; 50' width; 100' length) at upstream end of creek.	• Authorized project constructed.	
• East Haven Creek	• 6' depth; 50' width; 0.3-mile length connecting from Lafayette River Channel into creek to settling basin (8' depth; 50' width; 100' length) at upstream end of creek.	• Authorized project constructed.	
Channel to Nansemond Ordnance Depot	• 12' depth; 100' width; 0.5-mile length from Hampton Roads shoreward.	• Authorized project constructed; however, project no longer required and maintenance has been discontinued.	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
Channel to Nansemond Ordnance Depot (cont'd)	<ul style="list-style-type: none"> <li>• Turning basin at shoreward end of channel; 12' depth; 100' to 300' width; 300' length.</li> <li>• Construction of timber wharf; 650' length.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, project no longer required and maintenance has been discontinued.</li> <li>• Authorized project constructed; however, project no longer required and maintenance has been discontinued.</li> </ul>	
Bennetts Creek	<ul style="list-style-type: none"> <li>• 6' depth; 60' width; 2.4-mile length from Nansemond River into creek to city boat ramp at Bennetts Creek Park.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> </ul>	
Nansemond River	<ul style="list-style-type: none"> <li>• 12' depth; 100' width; 18.2-mile length from Hampton Roads into river to Business Route 460 highway bridge in Suffolk.</li> <li>• 10' depth; 80' width; 2.0-mile length side channel connecting from main channel into Western Branch to Reids Ferry.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, maintenance is no longer required.</li> <li>• Authorized project constructed; however, a 6' depth is now maintained.</li> </ul>	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
Nansemond River (cont'd)	<ul style="list-style-type: none"> <li>• Turning basin at upstream end of project in Suffolk; 12' depth; 200' square.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed; however, maintenance is no longer required.</li> </ul>	
Newport News Creek	<ul style="list-style-type: none"> <li>• <u>Dual, overlapping, entrance channel:</u> <ul style="list-style-type: none"> <li>• 16' depth; 125' width; 0.2-mile length from Hampton Roads into wave screen area.</li> <li>• 12' depth; 90' to 150' width; 0.9-mile length from Hampton Roads upstream to turning basin.</li> </ul> </li> <li>• North access channel: 16' depth; 150' width; 0.2-mile length; located within wave screen.</li> <li>• South access channel: 16' depth; 200' width; 0.2-mile length; located within wave screen.</li> <li>• Barge fleeting area: 16' depth; 100' to 500' width; 1,100' to 1,140' long; located within wave screen.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> </ul>	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS  
(Cont'd)

Project	Authorized	Constructed	Not yet constructed
Newport News Creek (cont'd)	<ul style="list-style-type: none"> <li>• Turning basin/anchorage area/municipal boat harbor at upstream terminus of creek; 12' depth; 188' to 214' width; 500' length.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> </ul>	
Hampton Creek	<ul style="list-style-type: none"> <li>• 12' depth; 150' to 200' width; 2.5-mile length from Hampton Roads into creek to Queen Street bridge.</li> <li>• 12' depth; 80' to 100' width; 0.6-mile length side channel connecting from main channel into Herberts (Sunset) Creek to Kecoughtan Road.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> <li>• Authorized project constructed.</li> </ul>	
Channel from Phoebus	<ul style="list-style-type: none"> <li>• 12' depth; 150' width; 0.8-mile length from Hampton Roads to Phoebus waterfront.</li> </ul>	<ul style="list-style-type: none"> <li>• Authorized project constructed.</li> </ul>	
Collection and Removal of Drift	<ul style="list-style-type: none"> <li>• Collection and removal of floating debris in harbor.</li> </ul>	<ul style="list-style-type: none"> <li>• No construction facilities involved; maintenance activities only.</li> </ul>	
Prevention of Obstructive and Injurious Deposits	<ul style="list-style-type: none"> <li>• Prevention, detection, and prosecution of the deposit of waste, refuse, and other injurious materials into navigable waters.</li> </ul>	<ul style="list-style-type: none"> <li>• No construction facilities involved; maintenance activities only.</li> </ul>	

Table II-1. CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS

(Cont'd)

Project	Authorized	Constructed	Not yet constructed
<u>Related Projects:</u>			
<ul style="list-style-type: none"> <li>• General</li> </ul>	<ul style="list-style-type: none"> <li>• In addition to Craney Island Dredged Material Area, the Corps of Engineers may place suitable dredged material in the following two open ocean sites; these sites have been approved by the Environmental Protection Agency.</li> </ul>		
<ul style="list-style-type: none"> <li>• Dam Neck Dredged Material Area</li> </ul>	<ul style="list-style-type: none"> <li>• 10-square-mile area located about 3 miles east of Virginia Beach.</li> </ul>		
<ul style="list-style-type: none"> <li>• Norfolk Dredged Material Area</li> </ul>	<ul style="list-style-type: none"> <li>• 50-square-mile area located about 17 miles east of mouth of Chesapeake Bay; unlimited useful life.</li> </ul>		

(1) All depths refer to mean lower low water.

(2) The 350-foot width is based on the design for the 55-foot channel in General Design Memorandum 1, Norfolk Harbor and Channels, Virginia dated June 1986. The width needed for the inbound element will be determined during the Preconstruction Engineering and Design phase of the 50-foot inbound element, based on current requirements for inbound traffic.

(3) Please see anchorage designations for (F), (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## **CONSTRUCTED PROJECTS/ELEMENTS OF PROJECTS**

In many cases, authorized project dimensions and constructed project dimensions are the same. However, in the case of the Norfolk Harbor and Channels project, only a portion--an element--of the most recently authorized project has been constructed and is currently being maintained. The following table provides a summary of Corps of Engineers' maintenance dredging activities for the constructed projects/elements of projects in the Port of Hampton Roads area. The subsequent paragraphs describe the authorized dimensions (see also the previous table), constructed dimensions, maintenance activities, local cooperation requirements, purpose, and current use for each project. The data in the table and the subsequent narrative are meant to provide a general picture of the maintenance and usage of the various navigation projects in Hampton Roads. The actual maintenance dredging requirements and schedules are subject to frequent changes due to many factors, including navigation conditions; shoaling; Congressional actions; budget constraints within the Norfolk District or imposed by higher authority; and delays as a result of local sponsors, regulatory agencies, placement sites, and engineering, legal, and contracting issues. It is noted that the current year schedules are frequently updated, and the latest data may be obtained as indicated in Table I-6 and Appendix E. The elements of existing authorized projects that have not yet been constructed will be discussed in the next part of Section II.

Table II-2. CORPS OF ENGINEERS PROJECT MAINTENANCE (1)

Project	Date last dredged (Federal fiscal year)	Estimated cycle (years) (2)	Average volume per cycle (cubic yards) (2)	Placement area
Thimble Shoal Channel	1996	3	400,000	Dam Neck Dredged Material Area
<u>Norfolk Harbor Project:</u>				
• Norfolk Harbor Channel				
• Entrance Reach	1988	20+	Has not required maintenance since improved in 1988.	Craney Island Dredged Material Area
• Norfolk Harbor Reach and Craney Island Reach	1999	1	1,000,000	Craney Island Dredged Material Area
• Elizabeth River Channel	1998	5	400,000	Craney Island Dredged Material Area
• Southern Branch of Elizabeth River				
• Lower Reach and Middle Reach	1998	5	(3)	Craney Island Dredged Material Area
• Upper Reach (4)	1998	3	100,000	Craney Island Dredged Material Area
• Eastern Branch of Elizabeth River	1989	20+	(5)	Craney Island Dredged Material Area

Table II-2. CORPS OF ENGINEERS PROJECT MAINTENANCE  
(Cont'd)

Project	Date last dredged (Federal fiscal year)	Estimated cycle (years) (2)	Average volume per cycle (cubic yards) (2)	Placement area
• Western Branch of Elizabeth River	1986	20+	(5)	Craney Island Dredged Material Area
• Scotts Creek	1932	Has not required maintenance since initial construction in 1932.	(6)	--
• Anchorages				
• I-64 Bridge-Tunnel	1999	6	80,000	Craney Island Dredged Material Area
• Sewells Point	1995	4	600,000	Craney Island Dredged Material Area
• Lamberts Point	1960	(6)	(6)	--
• Pinners Point	1929	(6)	(6)	--
• Craney Island Dredged Material Area	--	--	--	--
<u>Channel to Newport News:</u>				
• Channel	1999	4	150,000	Craney Island Dredged Material Area



Table II-2. CORPS OF ENGINEERS PROJECT MAINTENANCE  
(Cont'd)

Project	Date last dredged (Federal fiscal year)	Estimated cycle (years) (2)	Average volume per cycle (cubic yards) (2)	Placement area
• Anchorages	1996	4	400,000	Craney Island Dredged Material Area
<u>Atlantic Intracoastal Waterway:</u>				
• Albemarle and Chesapeake Canal Route (7)	1992	20+	(5)	Craney Island Dredged Material Area
• Dismal Swamp Canal Route (7)	1979	20+	(5)	Craney Island Dredged Material Area
Lynnhaven Inlet	1997	3	180,000	Suitable material used to nourish nearby beaches; remaining material placed in upland confined area just inside inlet.
Little River (Creek) (8)	--	--	--	--
Willoughby Channel	1994	20+	(5)	Material used to nourish nearby beaches.

Table II-2. CORPS OF ENGINEERS PROJECT MAINTENANCE  
(Cont'd)

Project	Date last dredged (Federal fiscal year)	Estimated cycle (years) (2)	Average volume per cycle (cubic yards) (2)	Placement area
Lafayette River	1993	20+	(5)	Craney Island Dredged Material Area
Channel to Nansemond Ordnance Depot (9)	--	(6)	(6)	--
Bennetts Creek	1998	3	20,000	Craney Island Dredged Material Area
Nansemond River (10)	1994	5	20,000	Upland confined area adjacent to mouth of Western Branch.
Newport News Creek	1998	8	50,000	Suitable material used to nourish nearby beaches; remaining material placed in Craney Island Dredged Material Area.
Hampton Creek	1997	8	100,000	Craney Island Dredged Material Area

Table II-2. CORPS OF ENGINEERS PROJECT MAINTENANCE  
(Cont'd)

Project	Date last dredged (Federal fiscal year)	Estimated cycle (years) (2)	Average volume per cycle (cubic yards) (2)	Placement area
Channel from Phoebus	1944	Has not required maintenance since last maintenance dredging in 1944.	(6)	--
Collection and Removal of Drift	--	--	--	--
Prevention of Obstructive and Injurious Deposits	--	--	--	--
<u>Related Projects:</u>				
• Dam Neck Dredged Material Area	--	--	--	--
• Norfolk Dredged Material Area	--	--	--	--

- (1) Maintenance of turning basins is included as part of respective channel segment work.
- (2) Subject to change due to many factors as discussed in the introductory text preceding this table.
- (3) The Elizabeth River Channel and the Lower and the Middle Reaches of the Southern Branch are maintained as one segment.
- (4) The 250-foot-wide portion of channel farthest upstream was improved during Fiscal Years 1980 and 1981 and has since not been maintained.
- (5) There is a long interval between maintenance cycles; an average volume has not been established.
- (6) This feature is no longer maintained.
- (7) This refers only to the portion of the route downstream from the locks, either in the Southern Branch or Deep Creek.
- (8) This project is maintained by the Navy.
- (9) The authorized project was constructed; however, the project is no longer required, and maintenance has been discontinued.

(10) No maintenance dredging is performed on the main channel at this time since depths are adequate for the recreational craft and small commercial seafood boats that use the waterway. However, the Western Branch channel is maintained about every 5 years.

## **THIMBLE SHOAL CHANNEL**

The Thimble Shoal Channel has an authorized depth of 55 feet over a 1,000-foot width for a distance of about 13.4 miles from deep water in the entrance of Chesapeake Bay at Cape Henry to a point about 4 miles east of Old Point Comfort. However, it has not been constructed to its full authorized dimensions. The outbound element has been dredged to a depth of 50 feet over a 650-foot width, and the remaining 350-foot-wide inbound portion is maintained to a depth of 45 feet. Approximately 400,000 cubic yards of material is dredged from the channel every 3 years and placed in the Dam Neck Dredged Material Area, an open ocean site located off Virginia Beach. The last time the channel was dredged was in 1996. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions in the Thimble Shoal Channel. In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through the VPA, is responsible for 50 percent of the increase in maintenance costs associated with channel depths in excess of 45 feet. However, no incremental increase in maintenance dredging has been attributed to the 50-foot depth since 1989. Also, since placement of the dredged material is in the open ocean site at Dam Neck, there are no placement fees. Therefore, the Federal Government currently funds 100 percent of the maintenance costs.

The channel provides the only means of entrance and departure for deep-draft ships utilizing the Port of Hampton Roads and ports along the James River. This includes commercial vessels engaged in foreign and coastwise trade carrying items such as coal, petroleum, grain, general cargo, and containerized cargo. In fact, Hampton Roads is the largest coal exporting port in the world, and coal is the primary beneficiary of the 50-foot outbound element. In 1996, deep-draft-vessel trips through the Thimble Shoal Channel totaled over 37,000. The channel is also used by ships calling at the Norfolk Naval Base, the largest naval complex in the world. Some of these vessels require up to 45 feet of depth.

## **NORFOLK HARBOR PROJECT**

As discussed previously, the Norfolk Harbor project is comprised of several elements and is the largest part of the Inner Harbor portion of the Norfolk Harbor and Channels project. (The Channel to Newport News and its anchorages are the remaining part of the Norfolk Harbor and Channels Inner Harbor section.) The following discussion addresses each of the Norfolk Harbor project elements in detail and includes the Norfolk Harbor Channel; the Elizabeth River Channel; the Southern, Eastern, and Western Branches of the Elizabeth River; Scotts Creek; various anchorages; and the Craney Island Dredged Material Area.

### **Norfolk Harbor Channel**

The Norfolk Harbor Channel is authorized to a depth of 55 feet and width of 1,500 feet over a 6.3-mile length from deep water near Fort Wool, a point just west of the Hampton Roads Bridge-Tunnel, to a point just south of the Norfolk International Terminal piers where the channel narrows to a width of 800 feet. The first part of this segment, extending 2.0 miles west of the Hampton Roads Bridge-Tunnel to the junction with the Channel to Newport News, is known as the Entrance Reach. The remaining portion, continuing to Norfolk International Terminal, is known as the Norfolk Harbor Reach and is 4.3 miles long. From Norfolk International Terminal, the channel is authorized at the same depth and the 800-foot width for 2.6 miles to the Norfolk Southern Railway coal loading piers at Lamberts Point. This segment of the channel is also known as the Craney Island Reach. The three reaches--Entrance Reach, Norfolk Harbor Reach, and Craney Island Reach--that form the Norfolk Harbor Channel are a total of 8.9 miles long.

As with the Thimble Shoal Channel, this channel has not been constructed to its full authorized dimensions. As a result of General Design Memorandum 1, Norfolk Harbor and Channels, Virginia dated June 1986, the width of the Norfolk Harbor Channel through the Entrance Reach and the Norfolk Harbor Reach has been reduced to 1,000 feet for the 55-foot depth. To date, the Entrance Reach has been constructed to a depth of

50 feet over a 1,000-foot width. Within the Norfolk Harbor Reach and the Craney Island Reach, a 650-foot-wide outbound element has been constructed to a depth of 50 feet. In addition, the first 4,000 feet of the Craney Island Reach downstream from Lamberts Point has been constructed to a 50-foot depth over the full 800-foot authorized width to allow the large bulk coal carriers departing from the coal terminal to attain safe maneuvering speed. The remaining portion of the Norfolk Harbor Channel from the bridge-tunnel to Lamberts Point is maintained at the previously authorized depth of 45 feet on the inbound side of the channel, over a width varying from 150 feet in the Craney Island Reach to 600 feet in the Norfolk Harbor Reach.

The Entrance Reach has not required maintenance since it was deepened in 1988. On the other hand, approximately 1 million cubic yards of material is dredged annually from the Norfolk Harbor Reach and the Craney Island Reach with deposition in the Craney Island Dredged Material Area. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions in the Norfolk Harbor Channel. As with the Thimble Shoal Channel, the Commonwealth of Virginia, acting through the VPA, is responsible for 50 percent of the increase in maintenance costs associated with channel depths in excess of 45 feet. However, no incremental increase in maintenance dredging has yet been attributed to the 50-foot depth. Also, local access channels and berthing areas are a local responsibility.

As with the Thimble Shoal Channel, the Entrance Reach of the Norfolk Harbor Channel provides the only means of entrance and departure for deep-draft ships utilizing the Port of Hampton Roads and ports along the James River. The remaining two reaches, the Norfolk Harbor Reach and the Craney Island Reach, serve the terminals located on the southside of Hampton Roads, including the Norfolk International Terminals and the coal terminals at Lamberts Point. Two-thirds of coal shipments from Hampton Roads move over this portion of the channel. A 45-foot depth has been deemed adequate, in the past, for all other commodities moving through the port. However, with the advent of supercontainer ships, this is changing (see the next part of Section II). Naval vessels use

this channel extensively since it provides deep-water access to the naval base. In 1996, deep-draft vessel trips totaled over 32,000 through the Norfolk Harbor Channel.

### **Elizabeth River Channel**

The Elizabeth River Channel is authorized to a depth of 45 feet and width of 750 feet, and it extends for 3.0 miles from Lamberts Point upstream to the junction of the Eastern Branch and the Southern Branch of the river. The channel is further broken down into the Port Norfolk Reach and the Town Point Reach, and is maintained to a depth of 40 feet over the full authorized 750-foot width. The Elizabeth River Channel and the Lower and Middle Reaches of the Southern Branch are dredged as a unit about every 5 years and average about 400,000 cubic yards of dredged material that is placed in Craney Island. The channel was last maintained in 1998. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions in the channel. Also, local access channels and berthing areas are a local responsibility. The Elizabeth River Channel provides the only means of entrance and departure for deep-draft ships of foreign and coastwise trade utilizing terminal facilities and ship building and repair facilities in Chesapeake, Norfolk, and Portsmouth. This includes all kinds of commercial vessels carrying containers, petroleum, grain, general cargo, and miscellaneous dry bulk material such as fertilizer and scrap metal. Naval vessels, requiring up to 40 feet of depth also use the channel enroute to the Norfolk Naval Shipyard, located in Portsmouth.

### **Southern Branch of the Elizabeth River**

The Southern Branch navigation channel is authorized to a depth of 45 feet over its existing width of 450 feet from its junction with the Eastern Branch 2.0 miles upstream to the Norfolk and Portsmouth Belt Line Railroad bridge. This segment of the channel is known as the Lower Reach of the Southern Branch. From the Norfolk and Portsmouth Belt Line Railroad bridge, the channel narrows to 375 feet and extends 1.0 mile upstream to the Norfolk Southern Railway Bridge. This segment of the channel is known as the Middle Reach of the Southern Branch. From that point, the channel is authorized to a depth of 40 feet over its existing widths of 250 to 500 feet, 2.4 miles upstream to the Gilmerton Bridge. This is part of the Upper Reach. The channel then



extends 0.6 mile upstream of the Gilmerton Bridge at the authorized depth of 35 feet over a 300-foot width. Beyond that, the channel is authorized to a depth of 35 feet over a 250-foot width for 1.5 miles upstream to a point 0.8 mile upstream of the I-64 highway bridge. These two segments are also part of the Upper Reach. The total length of the Southern Branch channel is about 7.5 miles.

Several turning basins have also been authorized as part of the channel system. Just downstream of the Norfolk and Portsmouth Belt Line Railroad bridge, an approach and turning basin is authorized to a depth of 45 feet, a length of approximately 2,900 feet, and a width of 450 to 830 feet. Other authorized turning basins included one at the mouth of St. Julians Creek, 40 feet deep, 800 feet wide, and 400 to 600 feet long; one at the mouth of Milldam Creek, just downstream of the Gilmerton Bridge, 40 feet deep and 800 feet square; one at the mouth of Newton Creek, 35 feet deep and 600 feet square; and one at the mouth of Mains Creek near the upstream end of the project, 35 feet deep and 800 feet square.

There are several segments of the Southern Branch that have not been constructed to their full authorized dimensions. The Lower Reach and Middle Reach have been constructed to a depth of 40 feet, and the Upper Reach to the Gilmerton Bridge has been constructed to a depth of 35 feet. The remaining portion of the Upper Reach has been constructed to its authorized dimensions; however, the portion of channel that is 250 feet wide has not been maintained since it was improved during the period from 1980 to 1981. Several turning basins have also been constructed. They include the approach and turning basin just downstream of the Norfolk and Portsmouth Belt Line Railroad bridge to 40 feet deep, the turning basin at the mouth of St. Julians Creek to 35 feet deep, and the turning basins at the mouth of Newton Creek and Mains Creek to their authorized dimensions. All these basins were constructed to their full lengths and widths. The turning basin at Milldam Creek has not been constructed.

As discussed previously in the Elizabeth River Channel portion of this section, the Lower and Middle Reaches, both 40-foot channels, are maintained about every 5 years

and were last dredged in 1998. With regard to the 35-foot reaches, about 100,000 cubic yards are dredged every 3 years and placed in Craney Island; the last maintenance dredging occurred in 1998. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions of the Southern Branch of the Elizabeth River. Also, access channels and berthing areas are a local responsibility for the entire Southern Branch.

This channel provides the only means of entrance and departure for deep-draft ships of foreign and coastwise trade utilizing terminal facilities and ship building and repair facilities in Portsmouth and Chesapeake. This includes all kinds of commercial vessels carrying petroleum, grain, general cargo, and miscellaneous dry bulk material such as fertilizer and scrap metal. Naval vessels, requiring up to 40 feet of depth also use the channel enroute to the Norfolk Naval Shipyard, located in Portsmouth.

### **Eastern Branch of the Elizabeth River**

This channel has been constructed to its authorized dimensions. It extends from the junction with the Southern Branch, 1.1 miles upstream to the Norfolk Southern Railway Bridge at a depth of 25 feet and a width of 500 feet. The channel continues at a depth of 25 feet over a 300-foot width for a distance of 0.5 mile upstream to the Campestella Bridge. From this point, the 25-foot-deep channel extends over a width of 200 feet upstream to the second Norfolk Southern Railway Bridge, a distance of approximately 0.9 mile. At the upper end of this reach, a 25-foot-deep turning basin, approximately 5.5 acres in area, has also been constructed. The total length of the project is about 2.5 miles. Maintenance dredging in the Eastern Branch is required infrequently, with the dredged material being placed in Craney Island. The project was last maintained in 1989 after a long interval and has not needed dredging since then. The channel is not maintained upstream of the Campestella Bridge. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions of the Eastern Branch of the Elizabeth River. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost to maintain this channel. However, local access channels and berthing areas are a local responsibility.

The Eastern Branch is primarily associated with the ship building and repair facilities that line both sides of the waterway. The project provides deep-draft access for all types of vessels including commercial, recreational, and naval vessels to a variety of ship building and repair facilities located along the Eastern Branch in Norfolk.

### **Western Branch of the Elizabeth River**

This project has also been constructed to its authorized dimensions. A 24-foot-deep, 300-foot-wide channel has been constructed that connects to the main stem of the Elizabeth River Channel, and it extends 0.8 mile toward the mouth of the Western Branch. From that point, the channel continues at the 24-foot depth and a 200-foot width for a distance of 0.4 mile to a point downstream of the West Norfolk Bridge. The project then becomes an 18-foot-deep and 150-foot-wide channel, extending 0.6 mile to a point 0.3 mile upstream from the bridge for a total project length of about 1.8 miles. However, the 24-foot-deep portion of the project is now maintained to an 18-foot depth. Maintenance dredging in the Western Branch is required infrequently, with the dredged material being placed in Craney Island. It was last maintained in 1986 after a long interval and has not needed dredging since then. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions of the Western Branch of the Elizabeth River. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost to maintain this channel. However, local access channels and berthing areas are a local responsibility. This project provides deep-draft access for primarily commercial and recreational vessels to terminal and docking facilities along the Western Branch. It is important to note that two major container terminals are located near the mouth of the Western Branch.

### **Scotts Creek**

This project has been constructed to its authorized dimensions. The 12-foot-deep, 100-foot-wide channel connects to the main stem of the Elizabeth River Channel and extends into the creek. The total length of the channel is 0.7 mile. It has not been maintained since its initial dredging in 1932, because the available depths are adequate for existing traffic. In the event that maintenance dredging became necessary, there

would be no items of local cooperation in connection with maintaining the existing dimensions of Scotts Creek. The Federal Government, through the Corps of Engineers, would fund 100 percent of the cost to maintain this channel. However, local access channels and berthing areas are a local responsibility. This project provides access primarily for recreational vessels to public and private docking facilities along the Scotts Creek in Portsmouth, Virginia. There are also limited commercial seafood movements and usage by a diving company located near the mouth.

### **Anchorage**

Three fixed-mooring anchorage facilities, each capable of handling two vessels simultaneously and having a project depth of 55 feet, have been authorized. These facilities were planned for the existing Quarantine Anchorage Area and a portion of a Naval anchorage area (anchorage areas designated as part of the "F" and "G" series) just west of the Hampton Roads Bridge-Tunnel. However, during advanced engineering and design studies, the recommended anchorage improvements were modified. Specifically, the current recommendation provides for one circular 55-foot anchorage with a swinging radius of 1,500 feet in the vicinity of the anchorage area where the fixed mooring facilities were planned. Two anchorages opposite Sewells Point have also been authorized, each 45 feet deep with a swinging radius of 1,200 feet. However, it was recommended during advanced engineering and design studies that the easternmost (designated "K-1" on National Ocean Service Nautical Charts; See Appendix B, Table B-1.) of the two circular anchorages be enlarged to a swinging radius of 1,500 feet. A rectangular anchorage area on the west side of the Norfolk Harbor Channel opposite Lamberts Point (designated "P") has also been authorized, which aggregates 173 acres and consists of one space 38 feet deep and 1,500 feet square; a second space 35 feet deep and 1,500 feet square; and a third space 20 feet deep, 1,000 wide, and 3,000 feet long. Another 45-acre anchorage has been authorized to a depth of 12 feet near Pinners Point (designated "R"). The approaches from the navigation channels to the anchorage areas have also been included as part of the authorized projects.

The circular anchorage just west of the Hampton Roads Bridge-Tunnel was constructed to a depth of 50 feet over the 1,500 swinging radius in 1999. The two circular anchorages opposite Sewells Point have been constructed, each with a swinging radius of 1,200 feet. The westernmost (designated "K-2") of the two circular anchorages has been constructed to a 40-foot depth, and the other ("K-1") has been constructed to a 45-foot depth. However, deepening of the westernmost anchorage to 45 feet has since been deferred until a need for that depth develops. The Lamberts Point and Pinners Point anchorage areas have been constructed to their authorized dimensions. It is estimated that the anchorage just west of the Hampton Roads Bridge-Tunnel will be maintained every 6 years and yield an average of 80,000 cubic yards of dredged material per cycle. The Sewells Point anchorages were last dredged in 1995. They average about 600,000 cubic yards of dredged material every 4 years. All the material is placed in the Craney Island Dredged Material Area. The anchorages at Lamberts Point and Pinners Point are no longer maintained. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions in the Federally maintained anchorages within Hampton Roads, with the exception of the new 50-foot anchorage near the bridge-tunnel. The maintenance of the new 50-foot anchorage will be cost shared with the Commonwealth of Virginia, acting through the VPA, in accordance with the PCA.

These areas provide protected anchorage space for all types of commercial vessels calling at the Port of Hampton Roads. These anchorages are used primarily for vessels waiting for scheduled loading of commerce. However, the anchorages are also available for emergency situations such as breakdowns or severe weather conditions.

### **Craney Island Dredged Material Area**

Craney Island Dredged Material Area is a Federally-owned, Corps-operated, trapezoidal-shaped, 2,500-acre, man-made dredged material placement area located in Portsmouth, Virginia. It was authorized by the Rivers and Harbors Act of 1946 and constructed from 1956 to 1958. In accordance with the original design dimensions, the main exterior levees were constructed to 8 feet above Corps of Engineers low water with

step levees ultimately constructed to 18 feet above Corps of Engineers low water. Users of the facility may pump material directly into the diked area. There is also a rehandling basin to the southeast of the containment area which may be used by bottom-dump scows. Craney Island was originally designed to hold about 100 million cubic yards of material. Based on authority contained in Section 148 of the Water Resources Development Act of 1976, the Craney Island Management Plan was developed in December 1981 to intensively manage the site with a view to extending its life. The plan involved: (1) subdividing the area into three cells; (2) constructing new retaining dikes 1,000 feet inside the main exterior levee to allow eventual dredged material placement up to an average elevation of 30 feet above Corps of Engineers low water; and (3) rotating future placement annually among the three subcontainments, allowing a 1-year active placement cycle followed by a 2-year inactive cycle for each subcontainment.

Craney Island is an income-producing facility that receives funds from toll charges levied on non-Corps of Engineers users. The tolls, which are adjusted periodically, cover both the original construction cost and the subsequent operation and maintenance requirements, including implementation of the management plan. Currently, there are no items of local cooperation associated with the Craney Island Dredged Material Area. The original river bottom was deeded to the Corps by the Commonwealth of Virginia. This facility is designated for use by all private interests, municipalities, and government agencies accomplishing dredging in Hampton Roads harbor and adjacent waters. Located near the center of dredging activity, Craney Island is a very economical placement facility and is critical to the viability of the Hampton Roads maritime community.

## **CHANNEL TO NEWPORT NEWS**

The Channel to Newport News is authorized to a depth of 55 feet over its existing 800-foot width and extends 6.0 miles from its junction with the Norfolk Harbor Channel to the coal loading facilities at Newport News. In addition, there are two circular anchorages opposite Newport News Point that are each authorized to a depth of 45 feet over a 1,200-foot swinging radius. The channel has been dredged to a depth of 50 feet

over its full 800-foot width, and the anchorages have each been constructed to a depth of 40 feet over the full 1,200-foot swinging radius. However, deepening these anchorages to 45 feet has since been deferred until a need for that depth develops. Approximately 150,000 cubic yards of material are dredged from the channel every 4 years with deposition in the Craney Island Dredged Material Area. The last time the channel was dredged was in 1999. The two anchorages yield an average of about 400,000 cubic yards every 4 years. They were last maintained in 1996. Currently, there are no items of local cooperation in connection with maintaining the existing dimensions in the Channel to Newport News. Also, local access channels and berthing areas are a local responsibility. In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through the VPA, is responsible for 50 percent of the increase in maintenance costs associated with channel depths in excess of 45 feet. However, no incremental increase in maintenance dredging has yet been attributed to the 50-foot depth.

This project provides the only means of entrance and departure for deep-draft commercial vessels of foreign and coastwise trade carrying coal, petroleum, general, and container cargo utilizing the port of Newport News and other ports along the James River. The channel is also used by naval vessels that are built and repaired at the Newport News Shipbuilding and Drydock Company. Newport News handles about one-third of the coal exports from Hampton Roads, and coal is the primary beneficiary of the 50-foot channel. In 1996, deep-draft vessel trips totaled almost 24,000 through the Channel to Newport News.

## **ATLANTIC INTRACOASTAL WATERWAY**

The Atlantic Intracoastal Waterway is a naturally protected navigation route that generally parallels the Atlantic coast between Massachusetts and Florida. In Virginia, it passes down the Chesapeake Bay, through Hampton Roads harbor, and down the Southern Branch of the Elizabeth River. Here it splits into two inland water routes approximately paralleling each other south of Norfolk, Virginia.

### **Albemarle and Chesapeake Canal Route**

Route A of the Atlantic Intracoastal Waterway is locally known as the Albemarle and Chesapeake Canal Route, and it extends between a point on the Southern Branch, 2,500 feet south of the Norfolk Southern Railway Bridge, and the Virginia-North Carolina State line on the North Landing River, a distance of 27.2 miles. The authorized project has been constructed and provides for a channel that is 12 feet deep and from 90 feet wide in land cuts to 125 to 250 feet wide in rivers. The channel traverses the Southern Branch for 5.2 miles, the Virginia Land Cut (Albemarle and Chesapeake Canal) for 8.3 miles, and North Landing River for 13.7 miles. It also provides for a tidal guard lock at Great Bridge, Virginia, which forms a barrier that prevents the salt waters of the Southern Branch from entering the fresh waters of the Albemarle and Chesapeake Canal Route and, subsequently, the North Landing River. The channel downstream (north) of the locks in the Southern Branch is maintained infrequently, with the dredged material being placed in Craney Island. The Southern Branch portion of the project was last dredged in 1992.

Route A serves as the primary transportation link for the Atlantic Intracoastal Waterway system in this area. Navigation traffic is characterized by significant amounts of commercial and recreational activity. The majority of commercial traffic is internal and has responded to the needs of the regional growth in the Hampton Roads area. Principal commodities are sand, gravel, crushed rock, and petroleum products. Recreational activity has grown significantly over recent years as a direct result of the growth in population and the increase in leisure time devoted to water-based activities. The Albemarle and Chesapeake Canal route services both locally-based recreation traffic and coastal traffic in route to destinations along the Atlantic and Gulf coastlines.

### **Dismal Swamp Canal Route**

Route B, locally known as the Dismal Swamp Canal Route, is located between its juncture with the Southern Branch of the Elizabeth River in Chesapeake, Virginia, and the mouth of the Pasquotank River in North Carolina. The route covers a distance of 64.6 miles. The authorized project has been constructed and provides for a channel that is 10 feet deep and 100 feet wide in an upstream tributary of the Southern Branch, known as



Deep Creek, and in the Pasquotank River. Also included is a channel that is 9 feet deep and 50 feet wide in the Dismal Swamp and a channel that is 10 feet deep and 80 feet wide in Turners Cut, North Carolina. In addition, there are navigation locks located at Deep Creek and South Mills, North Carolina. Current traffic does not justify maintenance of the 9- and 10-foot-deep channels; therefore, until the traffic indicates the need for a change, a 6-foot-deep channel will be maintained. The Deep Creek portion of the project requires infrequent maintenance, with the dredged material being placed in Craney Island. The Deep Creek segment was last dredged in 1979.

Route B serves as the alternate transportation link for the Atlantic Intracoastal Waterway system in this area. Navigation traffic is characterized by various amounts of commercial and recreational activity, although pleasure boats are by far the predominant user. Auxiliary sailboats in the 30- to 40-foot range are the majority users of the canal. Some motor yachts over 50 feet long and bass boats use the canal also. Vessel activity is slow during the period from December to March.

## **LYNNHAVEN INLET**

The authorized project has been constructed and provides for an entrance channel that is 10 feet deep and 150 feet wide extending 1 mile from that depth in the Chesapeake Bay to a mooring area and turning basin that is 10 feet deep, 1,250 feet long, and 700 feet wide in Lynnhaven Bay, just upstream from the Lesner Bridge at the mouth of the inlet. A channel that is 9 feet deep and 90 feet wide extends eastward 2.0 miles from the mooring area and turning basin to Broad Bay, via the Long Creek-Broad Bay canal. There is also a channel that is 6 feet deep and 90 feet wide extending 0.5 mile through The Narrows connecting Broad and Linkhorn Bays. The project has a total length of approximately 5.2 miles. The project also includes a 0.3-mile side channel that is 8 feet deep and 100 feet wide, connecting into Long Creek. Approximately 180,000 cubic yards of material are dredged from the channel every 3 years with a majority of material being deposited into a confined area just inside and on the west shore of the inlet. The last time the project was dredged was 1997. Suitable sand from the channel has been used to nourish adjacent shoreline fronting the Chesapeake Bay and has also been

transported by trucks to nourish the resort strip along the Virginia Beach oceanfront. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost to maintenance dredge this project. However, as local sponsor, the City of Virginia Beach is responsible for the provision of adequate placement areas and the cost of containment dikes and other site preparation. In addition, local access channels and berthing areas are a local responsibility.

Lynnhaven Inlet is a very busy inlet that provides access for heavy commercial and recreational vessel traffic to public and private docking facilities within Lynnhaven Inlet and connecting waters. There are several seafood processing establishments and boat storage and repair facilities within the area. In addition, numerous recreational vessels are located along the connecting waters and use that the inlet on a regular basis, particularly during the summer months. Two of the more important users are the Virginia Pilot Association and the Association of Maryland Pilots, both of whom have large pilot boats based inside the inlet.

#### **LITTLE RIVER (CREEK)**

The authorized project has been constructed, and it provides for a channel that is 20 feet deep and 400 feet wide from that depth in the Chesapeake Bay to the railroad terminals, a distance of about 1.4 miles. The project also includes a turning basin at the upstream end of the channel adjacent to the terminals. The basin is 20 feet deep, 400 to 1,240 feet wide, and 1,160 feet long. Little Creek is maintained by the Navy. Local access channels and berthing areas are a local responsibility.

Little River, better known as Little Creek Inlet, is a very busy waterway with significant naval and commercial vessel traffic. Several seafood processing establishments and boat storage and repair facilities are located here. Petroleum products also move on this waterway. In addition, numerous recreational vessels use the inlet on a regular basis, particularly during the summer months. The Coast Guard has a station within the inlet, and it also uses the Federal channel. As previously indicated, numerous

naval vessels calling at the amphibious base use the channel. In 1996, vessel trips totaled almost 2,000 through Little Creek.

### **WILLOUGHBY CHANNEL**

The authorized project has been constructed, and it provides for a 10-foot-deep, 300-foot-wide channel from deep water in Hampton Roads to a point opposite the extreme tip of Willoughby Spit in Willoughby Bay, a distance of 1.5 miles. However, based on current vessel traffic, the project is currently being maintained to 6 feet deep and 200 feet wide. Maintenance dredging in Willoughby Channel is required infrequently. It was last maintained in 1994, when the material was placed on a nearby beach fronting Chesapeake Bay. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost to maintain this project. However, local access channels and berthing areas are a local responsibility.

The Willoughby Channel is very busy with commercial and recreational vessel traffic. The area is known for sailboats and an associated yacht basin with storage and repair facilities. Willoughby Bay is one of the best sailing areas in the region. Vessels from various locations along the East Coast call on this harbor. In addition, commercial fish are transported through docks in Willoughby Bay.

### **LAFAYETTE RIVER**

The authorized project has been constructed and provides for a channel that is 8 feet deep and 100 feet wide from deep water in Hampton Roads to the Hampton Boulevard Bridge, a distance of about 1.7 miles. From there, the channel continues at a 6-foot depth and 100-foot width to a point opposite Knitting Mill Creek, a distance of about 1.7 miles. The main channel then continues for 0.6 mile upstream to a point opposite East Haven Creek and immediately downstream of the Granby Street Bridge. The total length of the main channel from the head of East Haven Creek to deep water in Hampton Roads is 4.0 miles. A side channel extends from the main channel into East Haven Creek about 0.3 mile to a settling basin. The channel is 50 feet wide and 6 feet deep from that depth in the Lafayette River to the upstream end of the creek, and the

settling basin is 8 feet deep, 50 feet wide, and 100 feet long. Another side channel, 6 feet deep and 40 to 80 feet wide, extends 0.6 mile from the main channel into Knitting Mill Creek to a settling basin at the head of the creek. This basin is also 8 feet deep, 50 feet wide, and 100 feet long. Maintenance dredging in the Lafayette River is required infrequently, with the dredged material being placed in Craney Island. It was last maintained in 1993. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost to maintain the navigation channel, while the City of Norfolk is responsible for maintaining basins on the upstream ends of East Haven and Knitting Mill Creeks. Local access channels and berthing areas are also a local responsibility.

The Lafayette River is used primarily by recreational vessel traffic. Located along its many coves are high value residential homes and a yacht club with storage and repair facilities.

#### **CHANNEL TO NANSEMOND ORDNANCE DEPOT**

A 12-foot-deep channel was constructed as authorized over a width of 100 feet from deep water in Hampton Roads, a distance of approximately 0.5 mile shoreward to a 12-foot-deep turning basin varying in width from 100 to 300 feet and approximately 300 feet long. In addition, a 650-foot timber wharf was constructed. However, the project is no longer required and maintenance has been discontinued. There are no items of local cooperation associated with this discontinued project. The project was originally constructed to serve the Nansemond Ordnance Depot at the mouth of the Nansemond River; however, the property has been sold to private interest.

#### **BENNETTS CREEK**

The authorized project was constructed in 1992, and it provides a channel that is 6 feet deep and 60 feet wide from that depth in the Nansemond River into the creek and upstream to the city boat ramp at Bennetts Creek Park, a total distance of approximately 2.4 miles. Limited initial maintenance took place in 1998 and removed 14,000 cubic yards of dredged material, which were deposited in Craney Island. The maintenance cycle is estimated to be 3 years and the average volume about 20,000 cubic yards. The

City of Suffolk, as local sponsor, is responsible for 100 percent of the operation and maintenance costs apportioned to recreation. The Federal Government pays for 100 percent of the maintenance costs apportioned to commercial navigation. In addition, local access channels and berthing areas are a local responsibility. This project provides access for commercial and recreational vessels to public and private docking facilities along Bennetts Creek.

### **NANSEMOND RIVER**

The authorized project was constructed, and it provides a 12-foot-deep, 100-foot-wide channel that extends about 18.2 miles from that depth in Hampton Roads through the mouth of the river and upstream to the Business Route 460 highway bridge in Suffolk. There is also a turning basin that is 12 feet deep and 200 feet square near the bridge. A side channel, 10 feet deep and 80 feet wide, extends from the main channel 2.0 miles into the Western Branch of the Nansemond River to Reids Ferry. However, based on current vessel traffic in this reach, the channel is only being maintained to a depth of 6 feet. The Western Branch Channel is maintained about every 5 years and an average of about 20,000 cubic yards of dredged material is deposited in an upland site adjacent to the mouth of the Western Branch. It was last maintained in 1994. No maintenance dredging is performed on the main channel at this time since depths are adequate for the recreational craft and small commercial seafood boats that use the waterway. Although the Federal Government, through the Corps of Engineers, funds 100 percent of the dredging cost to maintain the Western Branch Channel, local interests are responsible for providing the upland placement site. Also, local access channels and berthing areas are a local responsibility. This project provides access primarily for recreational vessels to public and private docking facilities along the Nansemond River. There are also limited commercial seafood movements over the waterway.

### **NEWPORT NEWS CREEK**

The originally authorized project and more recently authorized project have both been constructed. There is now a dual entrance channel wherein a 16-foot-deep and

125-foot-wide channel overlays a 12-foot-deep and 150-foot-wide channel for a distance of 0.2 mile from Hampton Roads into an area shielded by a wave screen. The wave screen was constructed by VDOT and is now owned and maintained by the City of Newport News. Two channels branch off the 16-foot portion of the entrance channel, providing access into the wave screen berthing areas. The north access channel is 16 feet deep, 150 feet wide, and 0.2 mile long. It runs parallel to the north edge of two of the piers inside the wave screen and adjacent to their berthing areas. The south access channel is 16 feet deep, 200 feet wide, and 0.2 mile long. It runs parallel to the south edge of one of the piers inside the wave screen and adjacent to its berthing area. A barge fleeting area that is 16 feet deep, 100 to 500 feet wide, and 1,100 to 1,140 feet long is also located within wave screen and is south of the access channels and piers. The 12-foot-deep and 150-foot-wide portion of the entrance channel extends a distance of 0.3 mile from Hampton Roads and then narrows to a width of 90 feet for a distance of approximately 0.1 mile at the mouth. The channel then widens again to 150 feet and continues at a depth of 12 feet for approximately 0.5 mile into the inner harbor of Newport News Creek itself. At the upstream terminus of the project is a turning basin/anchorage area/municipal boat harbor of the same depth, 188 to 214 feet wide, and 500 feet long. Approximately 50,000 cubic yards of material are dredged from the channel every 8 years with deposition in Craney Island. In the past, some suitable material has been placed on nearby eroding shorelines. The project was last maintained in 1992. The more recently authorized portion of the project, the 16-foot-deep channel sections, was constructed in 1998. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost to maintain this project. However, local access channels and berthing areas are a local responsibility.

Newport News Creek is a very busy commercial harbor with some occasional recreational vessel traffic. A considerable number of barges use the harbor including the barge fleeting area within the wave screen. Commercial seafood, fabricated metal, petroleum products, and aggregate materials also move on this channel. The harbor has a full-time Harbor Master, hired by the City of Newport News, to manage utilization of this area.

## **HAMPTON CREEK**

The authorized project was constructed and provides a channel that is 12 feet deep and 200 feet wide across Hampton Flats and then 150 feet wide upstream to the Queen Street highway bridge, a total distance of about 2.5 miles. The project includes a side channel into Herberts (formerly Sunset) Creek, 12 feet deep and 80 to 100 feet wide, for a length of approximately 0.6 mile from the main channel in Hampton Creek to Kecoughtan Road (formerly Jackson Street). Approximately 100,000 cubic yards of material are dredged from the channel every 8 years with deposition in Craney Island. It was last maintained in 1997. The Federal Government, through the Corps of Engineers, funds 100 percent of the cost of maintenance dredging, while the City of Hampton pays the tolls for the use of Craney Island. Local access channels and berthing areas are also a local responsibility. Hampton Creek has both commercial and recreational vessel traffic. The area is known for sail boats and associated yacht basins with storage and repair facilities. In addition, petroleum products are transported on the creek.

## **CHANNEL FROM PHOEBUS**

The authorized project was constructed and provides a channel that is 12 feet deep and 150 feet wide from that depth in Hampton Roads to the Phoebus waterfront, a distance of about 0.8 mile. The project has not been maintained since 1944. The Federal Government, through the Corps of Engineers, would fund 100 percent of the cost to maintain this project, while local access channels and berthing areas would be a local responsibility. This project provides access for commercial and recreational vessels to public and private docking facilities along the Phoebus waterfront.

## **COLLECTION AND REMOVAL OF DRIFT**

This authorization provides for the collection and removal of floating drift in Hampton Roads and its tributary waters for the protection of navigation. It also provides for a debris dock and incinerator located on Craney Island. The project involves operation and maintenance activities only; it did not entail construction of any kind. There are no items of local cooperation associated with this project. The Federal Government funds 100 percent of the collection and removal of floating debris.

## **PREVENTION OF OBSTRUCTIVE AND INJURIOUS DEPOSITS**

This authorization also involves operation and maintenance only and does not entail construction of any kind. It provides for the preservation of the tidal waters of Hampton Roads. The laws are administered by an officer of the Corps of Engineers (usually the Norfolk District Commander) designated as Supervisor of the Harbor. The Supervisor, in coordination with the Coast Guard, Department of Justice, and other Federal and state agencies, conducts a program for the prevention, detection, and prosecution of the deposit of waste, refuse, and other injurious materials into navigable waters. The jurisdiction of the Supervisor of the Harbor of Hampton Roads includes Hampton Roads; the reaches of the Chesapeake Bay and Atlantic Ocean located in Virginia; and the tidal portion of their numerous tributaries, including the James River, York River, Rappahannock River, and the south shore of the Potomac River. There are no items of local cooperation associated with this project. The Federal Government funds 100 percent of this program.

## **RELATED PROJECTS**

### **Dam Neck Dredged Material Area**

This site, located about 3 miles east of Virginia Beach, has been in use since 1967 when the Corps dredged the Thimble Shoal Channel to a depth of 45 feet. Since that time, material dredged from the Thimble Shoal and Cape Henry Channels (with limited exceptions) has been deposited at Dam Neck. In 1977, the Environmental Protection Agency (EPA) designated Dam Neck as an interim ocean site for dredged material. The EPA approval of this site was for an interim period pending final designation for continuing use. At that time, the site contained an area of about 4 square miles with rectangular dimensions of 5,000 by 22,000 feet. An expanded site was designated as an approved ocean placement site under the Corps of Engineers authority contained in Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972. The expanded site contains an area of about 10 square miles, more than double the original site. The Corps approved the expanded site on September 23, 1985. Subsequently, EPA gave Dam Neck final designation under authority in Section 102(c) of the Marine



Protection Research and Sanctuaries Act of 1972. This final designation by EPA appeared in the Federal Register on March 31, 1988. As designated, Dam Neck is the primary placement site for three Federal channels: (1) Thimble Shoal, (2) Cape Henry, and (3) Atlantic Ocean Channels.

### **Norfolk Dredged Material Area**

This area is a large ocean site located about 17 miles east of the mouth of the Chesapeake Bay and is delineated by a circle with a radius of 4 nautical miles (50 square miles in area). The site was permanently designated by EPA pursuant to Section 102(c) of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended. The final rule was promulgated by EPA on July 2, 1993, and it was made effective that same day. The Norfolk Dredged Material Area has an unlimited useful life and serves as an alternate site for the Dam Neck Dredged Material Area for lower bay channels, as well as a site that can accommodate dredged material suitable for ocean placement from the inner harbor channels within the Port of Hampton Roads. This site has been used by the Navy for placement of material from the Yorktown Naval Weapons Station.

## **PROJECT ELEMENTS NOT YET CONSTRUCTED**

In several cases, particularly the Norfolk Harbor and Channels project, not all of the authorized features have been constructed and maintained. The following table and subsequent paragraphs address these authorized, but not yet constructed, project elements with respect to dredging to provide and maintain authorized dimensions. They do not address considerations such as improving tunnel covers, providing navigation aids, relocating utility crossings, and removing wrecks and obstructions. The table provides a summary of the estimated volume of dredged material associated with the initial construction of these elements. It also includes the estimated maintenance cycle, the estimated increase in the volume of maintenance dredged material on an annual basis, the probable placement area for the dredged material, and the document from which these estimates are drawn. Further, these elements have been grouped under categories such as "55-Foot Outbound Element." These combinations are driven by the necessity to create a

viable channel system, and a certain progression of events must be assumed. It is assumed that the order of construction would be the 50-foot inbound element to complete the 50-foot channel system, then the 55-foot outbound element, and finally the 55-foot inbound element to complete the full-width 55-foot channel system. In addition, since the Channel to Newport News was dredged to a width of 800 feet during the construction of the 50-foot outbound element, it is assumed, at this point, that no additional width is needed here for implementation of a 50-foot full-width channel. This assumption will be confirmed during the preconstruction engineering and design (PED) phase for the next element of channel construction. In addition, the same assumption of an 800-foot channel width applies to the 55-foot outbound element for the Channel to Newport News. The Elizabeth River Southern Branch Channels and the Deferred Anchorages are independent of this sequence and may occur at any time before, during, or after the sequence. The paragraphs subsequent to the table describe the elements in detail, including their current and future use; their current and authorized sizes; a description of their construction dimensions; details on their initial construction dredged material volumes; specifics on their increased maintenance volumes on an annual basis; their maintenance cycles; their environmental impacts; and their local cooperation requirements.

Table II-3. CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED (1)

Project	Estimated volume of dredged material for initial construction (1,000 cubic yards)	Estimated cycle for maintenance (years)	Estimated volume of dredged material for increased annual maintenance (1,000 cubic yards)	Placement area (2)	Reference document
<u>50' Inbound Element (Full-Width Channels):</u>					General Design Memorandum 1, Norfolk Harbor and Channels, Virginia dated June 1986. (3)
• Thimble Shoal Channel: Construct to 50' depth; 350' width. (3)	2,613	3	(5)	Dam Neck	
• Norfolk Harbor Channel: Construct to 50' depth; 150' to 350' width. (3)	1,228	1	(5)	Dam Neck	
• Channel to Newport News. (4)	--	--	--	--	
• Total	3,841		(5)		
<u>55' Outbound Element:</u>					Supplemental Engineering Report to General Design Memorandum 1, (cont'd)
• Atlantic Ocean Channel: Construct to recommended 60' depth; 650' width.	9,600	5	100	Dam Neck	
• Thimble Shoal Channel: Construct to authorized 55' depth; 650' width.	7,400	3	21	Dam Neck	

Table II-3. CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED (1)

(Cont'd)

Project	Estimated volume of dredged material for initial construction (1,000 cubic yards)	Estimated cycle for maintenance (years)	Estimated volume of dredged material for increased annual maintenance (1,000 cubic yards)	Placement area (2)	Reference document
<u>55' Outbound Element (cont'd):</u>					(cont'd)
• Norfolk Harbor Channel: Construct to authorized 55' depth; 650' to authorized 800' width.	4,300	1	179	Dam Neck	Norfolk Harbor and Channels, Virginia dated September 1989.
• Channel to Newport News: Construct to authorized 55' depth; authorized 800' width.	4,500	4	24	Dam Neck	(6)
• I-64 Bridge-Tunnel anchorage (F): Construct to authorized 55' depth; recommended 1,500' swinging radius. (10)	1,500	4	20	Dam Neck	
• Sewells Point easternmost anchorage (K-1): Construct to recommended 1,500' swinging radius. (10)	<u>3,200</u>	4	<u>28</u>	Dam Neck	
• Total	30,500		372		

Table II-3. CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED (1)  
(Cont'd)

Project	Estimated volume of dredged material for initial construction (1,000 cubic yards)	Estimated cycle for maintenance (years)	Estimated volume of dredged material for increased annual maintenance (1,000 cubic yards)	Placement area (2)	Reference document
<u>55' Inbound Element (Full-Width Channels):</u>					General Design Memorandum 1, Norfolk Harbor and Channels, Virginia dated June 1986. (7)
• Atlantic Ocean Channel: Construct to authorized 60' depth; 650' width. (7)	9,093	5	100	Dam Neck	
• Thimble Shoal Channel: Construct from 50' to authorized 55' depth; 350' width. (7)	2,993	3	12	Dam Neck	
• Norfolk Harbor Channel: Construct from 50' to authorized 55' depth; 150' to 350' width. (7)	3,974	1	97	Dam Neck	
• Channel to Newport News. (8)	--	--	--	--	
• Total	16,060		209		

Table II-3. CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED (1)  
(Cont'd)

Project	Estimated volume of dredged material for initial construction (1,000 cubic yards)	Estimated cycle for maintenance (years)	Estimated volume of dredged material for increased annual maintenance (1,000 cubic yards)	Placement area (2)	Reference document
<u>Elizabeth River Channel and Southern Branch Channel:</u>					
• Port Norfolk, Town Point, Lower, and Middle Reaches: Construct to authorized 45' depth; authorized 375' to 750' widths.	4,210	5	33	Craney Island	Plan of Action for Engineering and Design for Elizabeth River and Southern Branch 45-Foot and 40-Foot Improvements dated May 1988. (9)
• Upper Reach: Construct to authorized 40' depth; authorized 250' to 500' widths.	2,350	3	34	Craney Island	
<u>Deferred Anchorages:</u>					
• Sewells Point westernmost anchorage (K-2): Construct to authorized 45' depth; authorized 1,200' swinging radius. (10)	2,000	6	3	Dam Neck	Review Report on Channel to Newport News, Norfolk Harbor, (cont'd)

Table II-3. CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED (1)

(Cont'd)

Project	Estimated volume of dredged material for initial construction (1,000 cubic yards)	Estimated cycle for maintenance (years)	Estimated volume of dredged material for increased annual maintenance (1,000 cubic yards)	Placement area (2)	Reference document
<u>Deferred Anchorages (cont'd):</u> • Newport News anchorages (I-1 and I-2): Construct to authorized 45' depth; authorized 1,200' swinging radius each. (10)	3,300	6	3	Dam Neck	(cont'd) and Thimble Shoal Channel, Virginia dated March 1965.

- (1) All depths refer to mean lower low water. Construction of turning basins, if authorized, is included as part of respective channel segment work.
- (2) This is based on the most recently approved plan for the Norfolk Harbor project deepening, as contained in the 1989 Supplemental Engineering Report. All dredged material from deepening and widening work downstream (north) of Lamberts Point would be placed in the Dam Neck Dredged Material Area. Maintenance material from inside (west of) the Hampton Roads Bridge-Tunnel would continue to be placed at Craney Island, as would all material from improvements and maintenance upstream (south) of Lamberts Point. Consideration would be given to placing beach quality sand on area beaches under authority of Section 145 of the WRDA 76, as modified by Section 933 of the WRDA 86. Should there be an increase in Craney Island capacity for any reason, consideration would be given to placing some of the dredged material in Craney Island, which would result in a significant reduction in project cost.
- (3) This is based on widths associated with the 50-foot inbound element, which brings the channel to full width. Design widths for 50-foot full-width channels will be evaluated during the Preconstruction Engineering and Design phase of the 50-foot inbound element.

- (4) This channel was already dredged to the full authorized width of 800 feet during the 50-foot outbound element construction. Additional channel width has not been determined to be necessary at this time.
- (5) Based on experience with maintenance of the 50-foot outbound element, a significant increase in annual maintenance following the construction of these elements is not anticipated.
- (6) This document recommended that all material from subsequent improvements to the 55-foot channel system should be placed in the Dam Neck Dredged Material Area.
- (7) As with the 50-foot inbound element, the 55-foot inbound element would bring the 55-foot channel system to full width. Actual widths would need to be reevaluated during the Preconstruction Engineering and Design phase for this element.
- (8) This channel would have already been dredged to the full authorized width of 800 feet during the 55-foot outbound element construction. Additional channel width has not been determined necessary at this time.
- (9) There has been no approved document for the Elizabeth River Channel or the Southern Branch Channel elements, subsequent to the feasibility report; however, estimates for new work and maintenance were refined during the Preconstruction Engineering and Design investigations performed through 1994.
- (10) Please see anchorage designations for (F), (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).



## **50-FOOT INBOUND ELEMENT (50-FOOT FULL-WIDTH CHANNELS)**

This is the grouping of elements necessary to provide the viable 50-foot navigation system for deep-draft vessels, both inbound and outbound. In the past, the 45-foot depth has been deemed adequate for those commodities entering the port. However, as discussed earlier in Section II, with the advent of supercontainer ships, this is changing. Construction of the inbound elements would combine with the existing 50-foot outbound element to provide a uniform depth for both inbound and outbound traffic.

The outbound element of the Thimble Shoal Channel has already been dredged to 50 feet over a 650-foot width. Therefore, it would be necessary to dredge the inbound element to 50 feet over a width of 350 feet to attain the full authorized 1,000-foot width. The Norfolk Harbor Reach of the Norfolk Harbor Channel would be deepened from 45 feet to 50 feet over the remaining 350-foot width to provide the full width of 1,000 feet, as recommended in the 1986 General Design Memorandum. However, the actual width needed for inbound-outbound traffic at the 50-foot depth for the Norfolk Harbor Reach will be evaluated during the PED phase for this element. The portion of the Craney Island Reach not already at 50 feet, a section of channel 150 feet wide, would also be considered during the PED phase for this element. The Channel to Newport News has been constructed to a depth of 50 feet over its full authorized width of 800 feet. Both the Channel to Newport News and the Atlantic Ocean Channel will be reevaluated during the PED phase for this element.

Based on the most recently approved report for the Norfolk Harbor and Channels project, the September 1989 Supplemental Engineering Report to the 1986 General Design Memorandum, all dredged material from deepening and widening work downstream (north) of Lamberts Point would be placed in the Dam Neck Dredged Material Area. (The purpose of the 1989 Supplemental Engineering Report was to address changes in the construction plan since completion of the 1986 General Design Memorandum.) The material from upstream (south) of Lamberts Point would be placed in the Craney Island Dredged Material Area. It is estimated that only limited amounts of

material from Thimble Shoal Channel would be suitable for placement on area beaches. Should there be an increase in Craney Island capacity for any reason, consideration would be given to placing some of the dredged material in Craney Island, which would result in a significant reduction in project cost. Maintenance material from areas west of the Hampton Roads Bridge-Tunnel would continue to be placed in Craney Island and material east of the Bridge-Tunnel would continue to be placed in Dam Neck.

Based on the dimensions recommended by the 1986 General Design Memorandum, approximately 3,841,000 cubic yards of material would be dredged during the construction of the 50-foot inbound element. Maintenance would continue to be conducted annually on the Norfolk Harbor Channel and about every 3 years on the Thimble Shoal Channel, with the dredged material going to Craney Island and Dam Neck, respectively.

There are no significant adverse environmental impacts that would result from construction of this deepening. All NEPA and related documentation have been fully satisfied but will need to be updated prior to construction.

In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through the VPA, would be responsible for 60 percent of the General Navigation Features (including Craney Island toll charges, but excluding aids to navigation), 10 percent of which can be paid over 30 years. In addition, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would also be the responsibility of the Commonwealth of Virginia. Based on experience to date in maintaining the 50-foot outbound element, a significant increase in maintenance is not anticipated for the 50-foot inbound element following its completion.

## **55-FOOT OUTBOUND ELEMENT**

This is a very large grouping of navigation features, and it would represent a significant effort in terms of time and cost. To date, the 50-foot outbound element has been adequate to serve the needs of the port. However, there is increasing interest in

deepening the system beyond 50 feet to accommodate large bulk coal carriers leaving the Port of Hampton Roads with maximum drafts exceeding 50 feet. The anchorage improvements would be needed to accommodate these large vessels.

In order to handle vessels of this size, it would be necessary to construct the Atlantic Ocean Channel, which would connect deep water in the Atlantic Ocean with deep water at the entrance of the Chesapeake Bay. This channel is naturally deep enough to accommodate existing vessel traffic; however, with the deepening of the other outbound elements in the project to 55 feet, this channel would need to be improved. It would be dredged to a depth of 60 feet over a width of 650 feet for a distance of about 11.1 miles. The 60-foot depth is needed to allow increased under-keel safety clearance due to sea conditions in the open ocean. The Thimble Shoal Channel would be deepened to 55 feet over the 650-foot width of the existing 50-foot outbound element. The Entrance Reach of the Norfolk Harbor Channel would be dredged to 55 feet over the 1,000-foot width of the existing channel. The Norfolk Harbor Reach of the Norfolk Harbor Channel would be dredged to a depth of 55 feet over a width of 650 feet to match the width of the existing 50-foot outbound element. In addition, the first 4,000 feet downstream from Lamberts Point would be deepened to 55 feet over the full authorized width of 800 feet. The remaining portion of the Craney Island Reach would be deepened to the same depth over a 650-foot width to mirror the footprint of the existing outbound element. The Channel to Newport News would be deepened to 55 feet over its full authorized width of 800 feet. In addition, the anchorage (F) just west of the Hampton Roads Bridge-Tunnel would be dredged to its authorized depth of 55 feet over its recommended 1,500-foot swinging radius, and the easternmost anchorage at Sewells Point (K-1) would be expanded from a 1,200-foot to its recommended 1,500-foot swinging radius. All of these discussions are based on the 1986 General Design Memorandum.

Approximately 30,500,000 cubic yards of material would be dredged and placed in the Dam Neck Dredged Material Area. Suitable material from the Atlantic Ocean Channel and the Thimble Shoal Channel would be considered for placement on area

beaches. Maintenance would continue to be conducted annually on the Norfolk Harbor Channel and about every 5 years on the Atlantic Ocean Channel, every 3 years on the Thimble Shoal Channel, and every 4 years on the Channel to Newport News. The two anchorage areas would be maintained about every 4 years. The total estimated volume of dredged material for the increased maintenance dredging on these elements, on an annual basis, is expected to be an estimated 372,000 cubic yards.

There are no significant adverse environmental impacts that would result from construction of this deepening. All NEPA and related documentation have been fully satisfied but will need to be updated prior to construction.

In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through the VPA, would be responsible for 60 percent of the general navigation features (including Craney Island toll charges, but excluding aids to navigation) concerning depths greater than 45 feet, 10 percent of which can be paid over 30 years. In addition, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would also be the responsibility of the Commonwealth of Virginia. With regard to the improvements of the 45-foot anchorage near Sewells Point, the Commonwealth would be responsible for 35 percent of the general navigation features (including Craney Island Toll Charges, but excluding aids to navigation), 10 percent of which can be paid over 30 years. The Federal Government would be responsible for 100 percent of the operation and maintenance cost of the 45-foot anchorage.

#### **55-FOOT INBOUND ELEMENT (55-FOOT FULL-WIDTH CHANNELS)**

This grouping of elements provides for a complement to the 55-foot outbound element and would be required for large deep-draft vessels, such as fully-loaded supercontainer ships, inbound to the port. Construction of these elements would combine with the 55-foot outbound element to provide a uniform depth for both inbound and outbound traffic.

As stated in the introduction to this portion of Section II, a certain order of events is being assumed. In this case, it is assumed that the outbound element of the Atlantic Ocean Channel has already been constructed to a 60-foot depth over a 650-foot width. Therefore, it would be necessary to dredge the inbound element to 60 feet over the remaining 650 feet to attain the full recommended 1,300-foot width. In addition, the inbound element of the Thimble Shoal Channel would be deepened from 50 to 55 feet over the remaining 350-foot width to attain the full authorized 1,000-foot width. The Norfolk Harbor Reach of the Norfolk Harbor Channel would be deepened from 50 feet to 55 feet over the remaining 350-foot width to provide the full width of 1,000 feet, as recommended in the 1986 General Design Memorandum. The portion of the Craney Island Reach not already at 55 feet, a section of channel 150 feet wide, would also be deepened. The Channel to Newport News would have already been constructed to a depth of 55 feet over its full authorized width of 800 feet during the construction of the 55-foot outbound element. As with the 50-foot inbound element, the actual dimensions needed to accommodate future inbound-outbound traffic within each of these channels would be evaluated during the PED phase for the 55-foot inbound element.

Approximately 16,060,000 cubic yards of material would be dredged and placed in the Dam Neck Dredged Material Area. Suitable material from the Atlantic Ocean Channel and the Thimble Shoal Channel would be considered for placement on area beaches. Maintenance would be conducted annually on the Norfolk Harbor Channel, every 5 years on the Atlantic Ocean Channel, and every 3 years on the Thimble Shoal Channel. The estimated volumes of dredged material for the increased maintenance dredging on these elements, on an annual basis, are 100,000; 12,000; and 97,000 cubic yards for the Atlantic Ocean Channel, the Thimble Shoal Channel, and the Norfolk Harbor Channel, respectively.

There are no significant adverse environmental impacts that would result from construction of this deepening. All NEPA and related documentation have been fully satisfied but will need to be updated prior to construction.

In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through the VPA, would be responsible for 60 percent of the general navigation features (including Craney Island toll charges, but excluding aids to navigation), 10 percent of which can be paid over 30 years. In addition, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would also be the responsibility of the Commonwealth of Virginia.

### **ELIZABETH RIVER CHANNEL AND SOUTHERN BRANCH CHANNEL**

There are actually two groupings covered under this umbrella. The first considers deepening the existing channel from 40 feet to the authorized depth of 45 feet, and it combines portions of the Elizabeth River Channel (the Port Norfolk and Town Point Reaches) and the Southern Branch Channel (the Lower and Middle Reaches). The second considers deepening the existing channel from 35 feet to the authorized depth of 40 feet in the Upper Reach of the Southern Branch. Indeed, there is a potential need for a 45-foot channel along the Elizabeth River to accommodate container ship traffic to Portsmouth Marine Terminal and to Sea-Land Services, Inc., and along the Southern Branch Channel up to the Norfolk Southern Railway Bridge for commodities such as grain and petroleum products moving up the Southern Branch. There also is a potential need for the 40-foot channel improvement up to the Gilmerton Bridge for miscellaneous dry and liquid bulk commodities. The 40- and 45-foot-deep channel improvements would extend over the existing widths and include deepening the respective approach and turning basins to their full authorized dimensions. In addition, a new turning basin, 40 feet deep and 800 feet square, would be constructed in the Upper Reach.

Approximately 4,210,000 cubic yards and 2,350,000 cubic yards of material would be dredged from the 45-foot channel and 40-foot channel, respectively, and placed in the Craney Island Dredged Material Area. Maintenance would continue to be conducted about every 3 to 5 years on each. The estimated volumes of dredged material for the increased maintenance dredging on each, on an annual basis, are 33,000 and 34,000 cubic yards for the 45-foot and the 40-foot channels, respectively.

There are no significant adverse environmental impacts that would result from construction of these projects. All NEPA and related documentation have been fully satisfied but will need to be updated prior to construction.

In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through VPA, would be responsible for 35 percent of the general navigation features (including Craney Island toll charges, but excluding aids to navigation), 10 percent of which can be paid over 30 years. The Federal Government would be responsible for 100 percent of the operation and maintenance cost of the 45- and 40-foot channels.

### **DEFERRED ANCHORAGES**

Three anchorages were constructed in Hampton Roads to a depth of 40 feet. Construction to their authorized depth of 45 feet was deferred until a need was determined. Two of the anchorages (I-1 and I-2) are located near the upstream terminus of the Channel to Newport News opposite the Newport News Point. The third is the westernmost (K-2) of the two anchorages located opposite Sewells Point. All three have been constructed to a depth of 40 feet over a 1,200-foot swinging radius and are authorized to a depth of 45 feet. These anchorage improvements, although deferred, have not been deauthorized and might be needed at some future time.

Approximately 3,300,000 cubic yards and 2,000,000 cubic yards of material would be dredged from the Newport News and Sewells Point anchorage areas, respectively, and placed in the Craney Island Dredged Material Area. Maintenance would be conducted about every 6 years on both areas. The estimated volume of dredged material for the increased maintenance dredging on each area, on an annual basis, is 3,000 cubic yards.

There are no significant adverse environmental impacts that would result from construction of these projects. All NEPA and related documentation have been fully satisfied but will need to be updated prior to construction.

In accordance with the WRDA 86, as amended, the Commonwealth of Virginia, acting through VPA, would be responsible for 35 percent of the general navigation features (including Craney Island toll charges, but excluding aids to navigation), 10 percent of which can be paid over 30 years. The Federal Government would be responsible for 100 percent of the operation and maintenance cost of the three anchorages.



## **SECTION III**

### **PRE-AUTHORIZATION CORPS OF ENGINEERS PROJECTS/STUDIES**

---

## **SECTION III**

### **PRE-AUTHORIZATION CORPS OF ENGINEERS PROJECTS/STUDIES**

---

#### **GENERAL**

This section of the Plan discusses navigation investigations that fall into three stages: (1) those that have recently been studied, (2) those currently under study, and (3) those that may potentially be studied in the foreseeable future. Pertinent information relating to those studies is provided although the availability of data varies significantly, depending on the stage of the investigation. The following paragraphs discuss Section 933 studies, the Dredging Master Plan for the City of Norfolk, the Elizabeth River Environmental Restoration Study, the Eastward Expansion of Craney Island Study, and the Lynnhaven River Environmental Restoration Study. Please reference Appendix E, Tables E-1 and E-2.

#### **SECTION 933 STUDIES**

Section 145 of the WRDA 76, as modified by Section 933 of the WRDA 86 and Section 207 of the WRDA 92, provides the opportunity for beneficial uses of beach-quality dredged material through a cost-shared placement operation in conjunction with dredging operations at Federally-authorized navigation projects. Specifically, the additional cost of placing suitable dredged material on a public beach (over the least cost placement alternative that meets the Federal standard) can be cost shared on a 50/50 basis with the non-Federal sponsor including the state or locality (city, town, or county). Such a cost-sharing arrangement is subject to the added cost of placement being economically justified, based on hurricane and storm damage reduction benefits, and the environmental acceptability of the placement.

The Norfolk District has conducted Section 933 studies as part of the Norfolk Harbor and Channels Long-Term Disposal Study for the Outer Harbor area of Hampton Roads (the area west of the Hampton Roads Bridge-Tunnel) for the beaches shown on Plate 8. This effort produced individual reports to determine the Federal interest in the one-time placement of suitable dredged material from the proposed 55-foot outbound deepening project onto area beaches. Section 933 studies were also accomplished in 1987 to determine the Federal interest in cost sharing in the placement of sand dredged as part of the Baltimore Harbor and Channels project (Cape Henry Channel) onto beaches at East Ocean View and the Virginia Beach resort strip. The findings of these studies are summarized as follows:

<u>Study</u>	<u>Findings</u>
Sandbridge Beach, Virginia Beach	Economically justified
Virginia Beach Resort Strip, Virginia Beach	Economically justified
Ocean Park Beach, Virginia Beach	Economically justified
East Ocean View, Norfolk	<u>Not</u> economically justified
Central Ocean View Beach, Norfolk	Economically justified
Willoughby Spit Area, Norfolk	Economically justified
Buckroe Beach, Hampton	<u>Not</u> economically justified
Salt Ponds Beach, Hampton	<u>Not</u> economically justified
White Marsh Beach, Hampton	<u>Not</u> economically justified
Grandview Beach, Hampton	<u>Not</u> economically justified
Yorktown Beach, Yorktown	<u>Not</u> economically justified

The favorable studies listed above are awaiting construction of the 55-foot outbound element of the authorized Norfolk Harbor and Channels project. The following discussion summarizes the findings of these studies. Prior to construction of the 55-foot outbound element, the beaches resulting in favorable 933 studies would need to be reevaluated, if placement of sand were still supported by non-Federal interests.

### **SANDBRIDGE BEACH, VIRGINIA BEACH**

This report, dated August 1990, concluded that the added cost of dredging, approximately 1,097,000 cubic yards of sand from the Thimble Shoal Channel or approximately 1,226,000 cubic yards of sand from the Atlantic Ocean Channel, for placement on the beach at Sandbridge between the Naval Fleet Anti-Air Warfare Training Center at Dam Neck and Back Bay National Wildlife Refuge to construct a berm approximately 5 miles long and 100 feet wide at elevation 6 feet National Geodetic Vertical Datum (NGVD) is justified by the benefits associated with the placement of sand. The costs were estimated in 1990 to be \$5,378,000 for the Thimble Shoal Channel and \$5,144,000 for the Atlantic Ocean Channel, which would be cost shared on a 50/50 basis with the Commonwealth of Virginia acting as local cost-sharing sponsor.

### **VIRGINIA BEACH RESORT STRIP, VIRGINIA BEACH**

The Section 933 report, dated August 1989, concluded that the added cost of the placement of 1.1 million cubic yards of sand from the Atlantic Ocean Channel, or 1.0 million cubic yards of sand from the Thimble Shoal Channel, on the resort beach between Rudee Inlet and 49<sup>th</sup> Street is economically justified. The added costs for these placements were estimated in 1989 to be \$7.4 million from the Atlantic Ocean Channel and \$5.4 million from the Thimble Shoal Channel. Again, these added costs would be cost shared on a 50/50 basis with the Commonwealth of Virginia as local cost-sharing sponsor. It should also be noted that 1,174,000 cubic yards of sand from the dredging of the Cape Henry Channel were actually placed on the resort strip in the summer of 1989 as a result of the “Reevaluation Report, Virginia Beach Nourishment, Virginia Beach, Virginia, Sections 933 and 934 (PL 99-662) Study,” dated December 1987. Section 933 allowed cost sharing for the added cost, and Section 934 allowed extension of the existing beach nourishment project from 25 years to 50 years.

### **OCEAN PARK BEACH, VIRGINIA BEACH**

This report, dated July 1990, concluded that the added cost of placing 408,000 cubic yards of sand dredged from the Thimble Shoal Channel on the beach at Ocean Park between the Chesapeake Bay Bridge-Tunnel and Lynnhaven Inlet to

construct a berm approximately 11,000 feet long and 125 feet wide at elevation 5 feet NGVD is justified by the benefits associated with the placement. The estimated cost of this placement in 1990 was \$1,253,000, which would be cost shared on a 50/50 basis with the Commonwealth of Virginia acting as local cost-sharing sponsor.

#### **CENTRAL OCEAN VIEW BEACH, NORFOLK**

This report, dated March 1991, concluded that the added cost of placing 60,000 cubic yards of sand dredged from the Thimble Shoal Channel on the beach at Central Ocean View between Warwick Street and the eastern boundary of Community Beach to construct a berm approximately 2,340 feet long and 125 feet wide at elevation 5 feet m.l.w. is economically justified. The estimated cost of this placement was estimated in 1991 to be \$249,000, which would be cost shared on a 50/50 basis with the Commonwealth of Virginia acting as local cost-sharing sponsor.

#### **WILLOUGHBY SPIT AREA, NORFOLK**

The report, dated August 1990, concluded that the added cost of placing 386,000 cubic yards of sand dredged from the Thimble Shoal Channel on the beach at Willoughby Spit between Mason Creek Road and the terminal groin at the end of Lea View Avenue to construct a berm approximately 13,500 feet long and 125 feet wide at elevation 5 feet m.l.w. is justified by the benefits. The added cost of this placement was estimated in 1990 to be \$1,675,000, which would be cost shared on a 50/50 basis with the Commonwealth of Virginia acting as local cost-sharing sponsor.

### **DREDGING MASTER PLAN FOR THE CITY OF NORFOLK**

The Norfolk District developed a Dredging Master Plan for the City of Norfolk in Fiscal Year 1998 under authority of Section 22 of the WRDA 74 (Public Law 93-251, Planning Assistance to States), as amended. The effort was cost shared with the City of Norfolk on a 50/50 basis and is being accomplished in two phases. The Dredging Master Plan addresses three areas of dredging, including navigation, storm drainage, and in-town reservoir maintenance.

Phase 1 investigations included four principal tasks: (1) identification and description of the existing and potential dredging areas within the City of Norfolk; (2) identification and description of the criteria, methods, and locations used for disposal of dredged material; (3) definition and examination of partnering opportunities such as combining dredging jobs (piggybacking) in the interest of reducing mobilization and demobilization costs and, thus, reducing the total costs to the City; and (4) identification and description of the major factors used in determining dredging costs.

Phase 2 investigations included the following tasks: (1) identification of criteria for the prioritization of dredging projects by the City; (2) development of a 5-year prioritized dredging schedule of the City; (3) identification and discussion of potential Federal and state programs/funding sources for “new work” and/or periodic maintenance; and (4) preparation of a report formally documenting the Dredging Master Plan.

### **ELIZABETH RIVER ENVIRONMENTAL RESTORATION STUDY**

The Norfolk District conducted a Federally-funded reconnaissance study during Fiscal Years 1997 and 1998 that determined the need for environmental and other interrelated activities required to restore the Elizabeth River. The reconnaissance study identified a Federal interest in proceeding to a more detailed feasibility study that would be cost shared on a 50/50 basis with the non-Federal sponsors. In this connection, the Commonwealth of Virginia and the Cities of Chesapeake, Norfolk, Portsmouth, and Virginia Beach signed a Feasibility Cost-Sharing Agreement in July 1998 with the Norfolk District to proceed to the feasibility study phase. The feasibility phase is estimated to cost \$2.4 million and extend over a 3-year period.

The study area encompasses the entire Elizabeth River Basin, which is located in the Cities of Chesapeake, Portsmouth, Norfolk, and Virginia Beach, within the southside Hampton Roads area of southeastern Virginia. The Elizabeth River is approximately 20 miles in length and has a drainage area of about 165 square miles. Urban, rural, industrial, and residential areas blend together along the Elizabeth River and its branches.

More than 13,000 vessels, with a mix ranging from freighters and cargo ships to fishing boats and cabin cruisers, use the Elizabeth River annually. Three hundred years of industry and commerce have made the river one of the nation's most contaminated waterways. Only limited wetlands remain to support wildlife and filter stormwater runoff, the river's leading source of pollution. In 1993, the Chesapeake Bay Program identified the Elizabeth River as a "Region of Concern," targeting it as one of three sites in the Bay watershed where contaminants pose the greatest threat to natural resources. This sub-estuary of the Chesapeake Bay provides spawning grounds for fish; habitat for rare terns, peregrine falcons, and great egrets; and mud flats for shellfish.

The feasibility study, which was initiated in July 1998, will evaluate several environmental restoration projects in the Elizabeth River with primary focus on wetland restoration and sediment clean up. Specifically, 14 candidate wetland restoration sites throughout the watershed have been identified and will be evaluated. In the feasibility phase, field studies will be accomplished to evaluate the environmental, economic, and engineering suitability of these sites for restoration. These candidate sites primarily afford the opportunity for tidal saltmarsh wetland restoration. Various size and configuration alternatives will be developed at the various sites. With regard to sediment clean up, five sites have been identified for evaluation during the feasibility study. The first step in evaluating sediments at any given site is to specifically characterize the type and spatial extent of the sediment contamination. The second step is the identification of treatment technologies and methods. One of the five sites will be evaluated intensively during the feasibility study. The study is scheduled to be completed in 2001, and it will be the basis for construction authorization for the recommended environmental restoration projects.

### **EASTWARD EXPANSION OF CRANEY ISLAND STUDY**

Pursuant to the Congressional authority contained in a September 24, 1997, resolution of the U.S. House Committee on Transportation and Infrastructure, the Norfolk

District completed a reconnaissance study in March 1999 that determined a Federal interest in an eastward expansion of the Craney Island Dredged Material Area.

The Commonwealth of Virginia, acting through the VPA, strongly supports the next phase of study, the feasibility phase, and is an equal cost-sharing partner for this effort. The 3-year feasibility phase began in May 1999 and will be completed in 2002. The feasibility report, including NEPA documentation, will be the basis for Congress to authorize construction of an expansion of the Craney Island facility.

An eastward expansion of Craney Island would serve three purposes. First, it would provide a fourth cell that would extend the useful life of Craney Island as a dredged material containment area. Second, once filled, it could provide additional acreage for the development of projected long-term berthing and landside port facilities adjacent to the Norfolk Harbor Channel expressed by the VPA. Third, it could serve as a logistical and tactical area supporting deployment of national defense forces.

The port facilities currently owned by the Commonwealth of Virginia include three separate marine terminals: (1) the Newport News Marine Terminal, (2) Norfolk International Terminal, and (3) Portsmouth Marine Terminal. These terminals are managed by the VPA and are operated by Virginia International Terminals. Newport News Marine Terminal contains 150 acres, Norfolk International Terminal includes approximately 811 acres, and Portsmouth Marine Terminal totals 320 acres, including Sea-Land and CSX sites and 41 acres of undeveloped area. These terminals handle containers, breakbulk, and roll on-roll off (ro-ro) cargoes. All facilities have excellent highway access and are served by either the CSX or Norfolk Southern rail systems.

In order to meet projected future demands, major capital improvements have been recommended for all three of these marine terminals. However, even capital improvements to existing terminals will not fully accommodate the expected growth in and needs of the container shipping industry. Therefore, the VPA projects the need for a fourth marine terminal. They need an additional marine terminal to accommodate the



projected rapid increase in container traffic. Also, according to a study conducted by the U.S. Department of Transportation, Office of Intermodalism, entitled "The Impacts of Changes in Ship Design on Transportation Infrastructure and Operations," dated February 1998, mega ships or supercontainer ships are being constructed requiring channel depths of 50 feet or greater to more efficiently transport containers.

The above developments have prompted the Commonwealth of Virginia to explore ways to place the Port of Hampton Roads in a position to effectively capture and be responsive to the projected increases in container movements and the vessels that will move these containers. Hampton Roads has an advantage in terms of channel depths, because it already has a 50-foot outbound channel and has authorized depths to 55 feet. The need for the development of a mega ship port has already prompted support from the VPA to pursue the 50-foot inbound element of the Norfolk Harbor and Channels project.

With regard to the need for an additional container port terminal, the Virginia General Assembly has also authorized a study to evaluate the potential expansion of Craney Island as a site for a fourth marine terminal. The Virginia Secretary of Transportation is responsible for the study and has formed the Craney Island Study Committee to carryout the study.

The study by the Commonwealth is being carefully coordinated with this concurrent Federally-authorized study. The Corps study will address the Federal interest in expanding Craney Island to provide additional capacity for dredged material placement. The study will address a number of issues, including the projected dredged material placement needs in Hampton Roads; engineering and design techniques for the construction of an expansion to Craney Island; environmental, cultural, and social concerns; cost-sharing issues; and the future disposition of the expanded area of Craney Island to the Commonwealth of Virginia.

## **LYNNHAVEN RIVER ENVIRONMENTAL RESTORATION STUDY**

The Lynnhaven River Basin is located in Virginia Beach on the south shore of the Chesapeake Bay, just west of Cape Henry and 10 miles east of Norfolk. The river, which is a tributary of the Chesapeake Bay, is a rather shallow body of water from which extends two main branches--the Western Branch and the Eastern Branch. In addition, immediately inside Lynnhaven Inlet, there is a narrow channel running easterly known as Long Creek. This ends in a large body of water known as Broad Bay. Broad Bay, in turn, joins a second body of water named Linkhorn Bay. Also, Little Neck Creek, Great Neck Creek, and Crystal Lake all join Linkhorn Bay. All waters within the basin are brackish and are subject to the action of tides. The entire drainage area is 50 square miles. The total water surface area is approximately 10 square miles, and there are 100 miles of shoreline within the basin. There is a Federal navigation project that is maintained within the basin. It consists of channel depths varying from 10 feet deep at the entrance to Chesapeake Bay at Lynnhaven Inlet to 6 feet deep at the Narrows between Broad Bay and Linkhorn Bay.

The basin was once a highly productive ecosystem known worldwide for the famous Lynnhaven oyster. However, widespread residential and commercial development has gradually degraded the environmental resources within the basin. Loss of wetlands and forested buffers have resulted in increased sedimentation and degraded water quality. This, in turn, has caused loss of habitat for submerged aquatic vegetation, shellfisheries (oysters), and finfish/crab spawning and juvenile rearing areas.

The City of Virginia Beach has expressed the need for an environmental restoration study of the Lynnhaven River Basin. In this connection, a study has been authorized by a resolution adopted on May 6, 1998, by the Committee on Transportation and Infrastructure, U.S. House of Representatives. As indicated by a letter dated November 25, 1998, the City strongly supports the reconnaissance study and has expressed its willingness to cost share in a feasibility study.

The reconnaissance study, which is proposed for initiation in Fiscal Year 2000, will evaluate alternatives to improve the environmental quality of the Lynnhaven River Basin by restoring wetlands, submerged aquatic vegetation, and fisheries. Stabilizing eroding shorelines with wetland fringes, using wetlands for stormwater treatment, and improving submerged bottom by dredging or other methods of decontamination will be evaluated. It is important to note that the Chesapeake Bay, including the Lynnhaven River as a tributary, is one of the most important ecosystems in the nation, and environmental restoration is a high priority within the Administration.

## **SECTION IV**

### **PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES**

---

## **SECTION IV**

### **PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES**

---

#### **GENERAL**

The following paragraphs present general and specific discussions of navigation problems, needs, concerns, and opportunities identified within the Port of Hampton Roads. The first part of this section discusses general concerns associated with most ports such as anchorages, channels, dredged material placement areas, environmental requirements, funding constraints, rules and regulations, and other common issues. The second part of this section discusses specific navigation concerns that have been identified by port users and other interests (including businesses; private organizations; academia; and Federal, state, regional, and local agencies) within the Hampton Roads area. These specific concerns were identified primarily through interviews, meetings, and correspondence with port users and are categorized under one of the general concerns. The last part of the section presents the relevant prioritization criteria and methodology used by Circle "A" stakeholders to numerically rank the identified problems, needs, concerns, and opportunities.

#### **GENERAL CONCERNS**

There are a number of general navigation problems, needs, concerns, and opportunities that have been identified within the Port of Hampton Roads that are common to most large port complexes. These concerns are listed below and discussed in the following paragraphs:

- Anchorages
- Channels
- Dredged Material Placement Areas
- Environmental Concerns
- Funding
- Landside Concerns
- Navigation Information
- Rules and Regulations
- Supplemental Facilities

## **ANCHORAGES**

Natural water depths in most harbors are insufficient to accommodate large ships, which are required to anchor in port. Although large, deep-draft vessels must have a minimum in-port time due to the economics involved in operating costs, on many occasions, vessels are required to anchor while waiting for berths, crews, proper tidal conditions, better weather, or repairs. For these reasons, all ports must have some area where delayed vessels may be anchored safely without obstructing the channels or other water areas provided for the movement of vessels. The existing anchorage areas within Hampton Roads harbor are described in Section II.

## **CHANNELS**

Channels are waterway routes used by ships. Their primary function is to facilitate the safe movement of vessels between two points. They normally connect bodies of deep water and shallow water and permit vessels to call at waterfront facilities. Increases in the number and/or size of vessels calling at ports create a demand for improvement of a harbor's major navigable channels. Also, the improvement of ingress and egress channels to waterfront military and commercial facilities must keep pace with the main channels. Normal concerns, with respect to channels, include their depth, width, length, and location. The existing channels, which comprise the Port of Hampton Roads, are described in Section II.

## **DREDGED MATERIAL PLACEMENT AREAS**

The construction and maintenance of channels, anchorages, and other navigation features within the harbor result in the relocation of significant volumes of dredged material. The location of a convenient and environmentally acceptable dredged material placement area within economical distance of dredging operations is a crucial aspect of the operation and maintenance of all ports. The Craney Island Dredged Material Area serves this purpose. It is a 2,500-acre Federally-owned confined placement area located within the Hampton Roads harbor complex. Dredged material may also be placed in one of the two designated and approved off-shore sites, the Dam Neck Dredged Material Area and the Norfolk Dredged Material Area. These placement areas are described in Section II.

## **ENVIRONMENTAL CONCERNS**

Environmental concerns are related to the identification and description of beneficial and adverse effects of actions within the port on significant natural resources and historical properties. Relevant evaluations are necessary to comply with the requirements of Federal, state, and local legislation. Representative Federal laws include the Rivers and Harbors Appropriation Act of 1899, as amended; the Fish and Wildlife Coordination Act of 1958; the National Historic Preservation Act of 1966; the NEPA of 1969; the Clean Water Act; the Coastal Zone Management Act of 1972; the Marine Protection, Research, and Sanctuaries Act of 1972; and the Endangered Species Act of 1973. These evaluations include the effects on the ecological, cultural, and aesthetic attributes of the natural, historical, and cultural resources of the port area. Ecological attributes are components of the environment that directly or indirectly sustain dynamic, diverse, and viable ecosystems such as wetlands; plant and animal species; habitat; and the chemical and physical properties of air, water, and soil and other natural resources. Cultural attributes are evidence of past and present habitation that can be used to reconstruct or preserve human life ways. These include structures, sites, artifacts, and environmental and other relevant information. Aesthetic attributes are perceptual stimuli that provide diverse and pleasant surroundings for human enjoyment and appreciation such as sight, sound, scents, and tastes. Concerns are reviewed and addressed through the

environmental permitting requirements of the Corps of Engineers and the appropriate state and local authorities.

## **FUNDING**

The operation and development of all aspects of the port are dictated by budget constraints to various degrees. Rarely, if ever, are there sufficient funds to accomplish all that port users and interests desire. Thus, it is necessary to establish priorities so that available funds are used most efficiently and effectively. A primary purpose of the Plan is to prioritize the identified problems, needs, concerns, and opportunities associated with the operation, maintenance, and development of the port to better facilitate the allocation of limited funds.

## **LANDSIDE CONCERNS**

Landside concerns are numerous and varied, and they include the facilities and resources necessary for port operations. These concerns include receiving, storage, and transfer facilities; intermodal systems and land access; land for future development; police and fire protection; a productive workforce; and impacts on host cities--all of which are important within the port complex. In order to maintain a competitive port and to provide for future growth, it is imperative that the most effective landside facilities, resources, and operations are in place to compliment the waterways and related improvements to ensure efficient, safe, and equitable operations within the Hampton Roads port complex.

## **NAVIGATION INFORMATION**

Safe and efficient navigation requires accurate and timely information regarding water depths and levels, tides, currents, and other pertinent oceanographic and meteorological data. Much of this information is provided by the National Oceanic and Atmospheric Administration and is contained on nautical charts. Hydrographic surveys to determine the configuration of the bottom of water bodies, including the location and identification of derelict vessels and obstructions, are crucial to safe navigation, as is the precise location of landmarks and navigation aids. Harbor pilots and ship masters also



require accurate and real-time information in order to avoid groundings and collisions and permit the full utilization of tidal cycles. Real-time data regarding water levels, currents, and tidal conditions permit port authorities and maritime shippers to make sound decisions regarding the loading of tonnage based on available bottom clearance of the vessel. This will help to maximize loads and limit passage time without impacting safety.

## **RULES AND REGULATIONS**

As discussed in Section I, there are numerous rules and regulations administered by a number of Federal, state, and local agencies within any major harbor. These rules and regulations are necessary to efficiently and safely operate the port while protecting the environment. Some concern was expressed by stakeholders regarding the continued availability of appropriate permits for commercial development within the port and the opportunity to reduce and/or streamline some of the existing requirements.

## **SUPPLEMENTAL FACILITIES**

These facilities include turning basins, piers and wharves, and berthing and mooring areas required to accommodate vessels using the navigation channels and adjacent businesses. These necessary adjuncts to the harbor complex are critical to the operation of an efficient and competitive port. Vessels must have adequate turning areas for proper and safe maneuvering within the navigation channels. Adequate piers and wharves and berthing and mooring areas are necessary to permit ships to be loaded and unloaded in a timely manner without having to wait in anchorage areas at considerable costs to owners and operators. There is a need to ensure that these facilities are sufficient to accommodate the number and size of vessels calling at the port both now and in the foreseeable future. This need will be exacerbated by the expected increase in the number and size of ships calling at the port, particularly container vessels.

## SPECIFIC CONCERNS

A survey of port users and interests was accomplished in the early stages of the development of the Plan to identify specific problems, needs, concerns, and opportunities associated with the use and development of the navigation features of the port and the opportunities available for improvements. As part of the survey, respondents provided their short-range (less than 5 years) and long-range navigation plans so that future impacts on port use and development could be estimated. They also provided a rationale for determining the importance of their concerns, which guided Circle "A" stakeholders in establishing the prioritization criteria subsequently listed and ultimately assisted Circle "A" in the ranking of identified concerns. Information obtained through personal contacts was supplemented and confirmed at the first two workshop meetings conducted in October 1997 and June 1998. The complete list of concerns was also coordinated with more than 400 stakeholders on the Plan mailing list to obtain their input. The views of individual port users and interests obtained through personal surveys and workshop meetings were crucial to providing a comprehensive assessment of current and future navigation concerns facing the port. The following table lists the specific problems, needs, concerns, and opportunities that have been identified. Specific items of concern are listed under the appropriate general concern categories previously discussed.

Table IV-1. IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES

- I. Anchorages
  - A. Sewells Point: Need to deepen the westernmost anchorage opposite Sewells Point (K-2) from 40 feet to the authorized depth of 45 feet (6)
  - B. Sewells Point: Need to increase the swinging radius in the easternmost, 45-foot-deep anchorage opposite Sewells Point (K-1) from the authorized radius of 1,200 feet to the recommended radius of 1,500 feet (6)
  - C. Sewells Point: Need to make broader use of the anchorages opposite Sewells Point (K-1 and K-2) (6)
  - D. Lamberts Point: Need to make broader use of the anchorages opposite Lamberts Point (H-1) (6)

Table IV-1. IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND  
OPPORTUNITIES  
(Cont'd)

- E. Newport News: Need to deepen both anchorages opposite Newport News (I-1 and I-2) from 40 feet to the authorized depth of 45 feet (6)
  - F. Hampton Roads Bridge-Tunnel: Need to deepen the 1,500-foot swinging radius anchorage (F) just west of the Hampton Roads Bridge-Tunnel from 50 feet to the authorized depth of 55 feet (6)
  - G. Need additional anchorages
- II. Channels
- A. Depths
    1. Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point (1)
    2. Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point (2)
    3. Norfolk Harbor Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point (3)
    4. Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels
    5. Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad bridge
    6. Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge
    7. Channel to Newport News: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet (4)
    8. Channel to Newport News: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet (5)
  - B. Widths
    1. Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (6)
    2. Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (6)
  - C. Maintenance dredging: Continued and timely maintenance of port channels

Table IV-1. IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND  
OPPORTUNITIES  
(Cont'd)

- D. Crossings
  - 1. Bridges
  - 2. Tunnels
  - 3. Utility crossings
- E. Multiple-use conflicts: Potential conflicts between recreational, commercial, and military uses
- F. Navigation aids
  - 1. Better channel markings
  - 2. More lighted buoys
- G. Obstructions
  - 1. Derelict vessels, sunken barges, etc.
  - 2. Debris and drift material
  - 3. Docked boats that obstruct view of navigation channel
- III. Dredged Material Placement Areas
  - A. Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites
  - B. Use of Craney Island Dredged Material Area for port development
- IV. Environmental Concerns
  - A. Contaminated areas along rivers and on river bottoms
  - B. Deep channel effects on currents and depths in the vicinity of the Norfolk Naval Base
  - C. Water quality
  - D. Wetlands
- V. Funding
- VI. Landside Concerns
  - A. Receiving, storage, and transfer facilities
  - B. Intermodal facilities that may impact navigation
  - C. Land for future development
  - D. Police and fire protection
  - E. Productive workforce
  - F. Impact of port growth on the host cities
- VII. Navigation Information
  - A. Depths
  - B. Tides
  - C. Currents
  - D. Waves
  - E. Weather

Table IV-1. IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND  
OPPORTUNITIES  
(Cont'd)

- F. Waves
  - G. Weather
  
  - VIII. Rules and Regulations
    - A. Dredging permits
    - B. Unnecessary and burdensome
  
  - IX. Supplemental Facilities
    - A. Turning basins
    - B. Piers and wharves
    - C. Berthing and mooring areas
    - D. Additional dolphins for commercial vessels at Great Bridge Lock
    - E. Recreational boating facilities
- 
- (1) This segment of channel also requires the deepening of the inbound lane of the Thimble Shoal Channel from 45 feet to 50 feet.
  - (2) This segment of channel also requires the deepening of the inbound lane of the Thimble Shoal Channel from 45 feet to the authorized depth of 55 feet and the Atlantic Ocean Channel to the recommended depth of 60 feet.
  - (3) This segment of channel also requires the deepening of the outbound lane of the Thimble Shoal Channel from 50 feet to the authorized depth of 55 feet and the Atlantic Ocean Channel to the recommended depth of 60 feet.
  - (4) This segment of channel also requires the deepening of a portion of the inbound lane of the Norfolk Harbor Channel from 45 feet to the authorized depth of 55 feet, the inbound lane of the Thimble Shoal Channel from 45 feet to the authorized depth of 55 feet, and the Atlantic Ocean Channel to the recommended depth of 60 feet.
  - (5) This segment of channel also requires the deepening of a portion of the outbound lane of the Norfolk Harbor Channel from 50 feet to the authorized depth of 55 feet, the outbound lane of the Thimble Shoal Channel from 50 feet to the authorized depth of 55 feet, and the Atlantic Ocean Channel to the recommended depth of 60 feet.
  - (6) Please see anchorage designations for (F), (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

The following paragraphs discuss the specific concerns in the order in which they are listed in the previous table. Each concern is described as defined by the stakeholders(s) who identified it. When possible, the concerns are incorporated into the plan verbatim from the port user surveys. All specific problems, needs, concerns, and

opportunities related to navigation within the port that have been identified are included, regardless of their relative importance. In some cases, related concerns are discussed together.

## **ANCHORAGES**

The specific concerns related to anchorages are generally divided into four areas of the harbor: Sewells Point, Lamberts Point, Hampton Roads Bridge-Tunnel, and Newport News. For the most part, brief descriptions given in Table IV-1 adequately define the need as expressed by port users and interests. The basic concern, with respect to anchorage areas, is that they be sufficient in size, number, and location to safely and efficiently accommodate existing and prospective vessel traffic. Port interests expressed a need to construct the existing authorized anchorages to their fully authorized dimensions to be commensurate with increased channel dimensions. They also indicated opportunities for more commercial usage of the Navy anchorage areas opposite Sewells Point and a potential for the provision of additional deep-draft anchorages in the future to accommodate port growth and maintain its competitiveness.

## **CHANNELS**

More channel-related problems, needs, concerns, and opportunities were indicated by port users and interests than any other aspect of the harbor. These concerns are divided into seven individual categories: depths, widths, maintenance dredging, crossings, multiple-use conflicts, navigation aids, and obstructions. Each of these categories is discussed as follows:

### **Depths**

**Norfolk Harbor Channel: Need to Deepen the Inbound Lane from 45 Feet to 50 Feet to Lamberts Point.** This concern also requires the deepening of the inbound lane of the Thimble Shoal Channel from 45 feet to 50 feet since provision for both are required to achieve the desired results. Addressing this need would provide an inbound channel depth equal to the existing outbound channel depth, eliminating the current two-

level channel situation. It would primarily accommodate the existing and prospective increase in the size of container ships calling at the southside of the port.

**Norfolk Harbor Channel: Need to Deepen the Inbound Lane from 45 Feet to the Authorized Depth of 55 Feet to Lamberts Point.** This concern also requires the deepening of the inbound lane of the Thimble Shoal Channel from 45 feet to the authorized depth of 55 feet and the Atlantic Ocean Channel to the recommended depth of 60 feet to achieve prospective benefits. The need for the Atlantic Ocean Channel is a part of the Federally-authorized project to deepen the Hampton Roads harbor channels to a depth of 55 feet. The additional 5 feet in channel depth for the Atlantic Ocean Channel is required due to its open-ocean environment and the need for increased clearances beneath vessels' keels and the channel bottom. This project is described in detail in Section II. The entire deepening project, including the Atlantic Ocean Channel deepening, is required to safely and efficiently accommodate large bulk coal carriers departing the port with loaded drafts 50 feet and greater and to facilitate the inbound transit of the largest current and future container ships. An inbound channel that is 55 feet deep could be an independent increment of the overall Hampton Roads harbor authorized project providing safe and efficient access to the southside of the port for the largest container ships expected in the foreseeable future.

**Norfolk Harbor Channel: Need to Deepen the Outbound Lane from 50 Feet to the Authorized Depth of 55 Feet to Lamberts Point.** This concern also requires the deepening of the outbound lane of the Thimble Shoal Channel from 50 feet to the authorized depth of 55 feet and the Atlantic Ocean Channel to the recommended depth of 60 feet to provide a viable increment of the overall authorized Federal project. This would primarily serve the large bulk coal carriers departing the southside of the port with loaded drafts of 50 feet or greater. It would enable owners and operators of their ships to utilize the additional cargo carrying capacity of their vessels, thereby achieving savings in transportation costs and permitting larger vessels into the trade.

**Elizabeth River Channel: Need to Deepen from 40 Feet to the Authorized Depth of 45 Feet from Lamberts Point to the Junction of the Eastern and Southern Branch Channels.** This would benefit the terminals and ship repair yards located along this reach of the river and would provide safe and efficient access for larger ships to these areas.

**Southern Branch Channel: Need to Deepen from 40 Feet to the Authorized Depth of 45 Feet to the Norfolk Southern Railroad Bridge.** This would benefit the various industries, ship repair yards, and storage facilities located along this reach of the river and would provide safe and efficient access for larger ships to these locations.

**Southern Branch Channel: Need to Deepen from 35 Feet to the Authorized Depth of 40 Feet to the Gilmerton Bridge.** This concern expresses a need to deepen the existing 35-foot-deep channel to accommodate both existing and future vessel traffic engaged in the transport of grain, petroleum products, and miscellaneous dry and liquid bulk commodities. It would also provide an opportunity for further industrial development along the Southern Branch.

**Channel to Newport News: Need to Deepen the Inbound Lane from 50 Feet to the Authorized Depth of 55 Feet.** Addressing this need would also require the deepening of a portion of the inbound lane of the Norfolk Harbor Channel from 45 feet to the authorized depth of 55 feet, the inbound lane of the Thimble Shoal Channel from 45 feet to the authorized depth of 55 feet, and the Atlantic Ocean Channel to the recommended depth of 60 feet. An inbound channel that is 55 feet deep would provide safe and efficient access to the northside of the port for the largest container ships expected in the foreseeable future.

**Channel to Newport News: Need to Deepen the Outbound Lane from 50 Feet to the Authorized Depth of 55 Feet.** Addressing this need would also require the deepening of a portion of the outbound lane of the Norfolk Harbor Channel from



50 feet to the authorized depth of 55 feet, the outbound lane of the Thimble Shoal Channel from 50 feet to the authorized depth of 55 feet, and the Atlantic Ocean Channel to the recommended depth of 60 feet. This would primarily serve the large bulk coal carriers departing the northside of the port with loaded drafts of 50 feet or greater. It would enable owners and operators of these ships to utilize additional cargo carrying capacity of their vessels, thereby achieving savings in transportation costs and permitting larger vessels into the trade.

## **Widths**

**Need to Deepen the Entire Easternmost Anchorage Area Opposite Sewells Point (K-1) and a Small Section of Channel to 50 Feet to Provide Easier Transit between the Norfolk Harbor Channel and the Channel to Newport News; in Addition, the K-1 Anchorage Would Need to Be Relocated.** The need is to provide a safer and more efficient turn to facilitate the maneuvering of large vessels from one channel to the other. On some occasions, it is necessary to use tugs for making the turn.

**Need to Deepen the Entire Easternmost Anchorage Area Opposite Sewells Point (K-1) and a Small Section of Channel to 55 Feet to Provide Easier Transit between the Norfolk Harbor Channel and the Channel to Newport News; in Addition, the K-1 Anchorage Would Need to Be Relocated.** A depth of 55 feet would provide safe and efficient maneuvering between channels for the largest bulk coal carriers and container ships, and it would be commensurate with the deepening of the Hampton Roads harbor channels to the authorized depth of 55 feet.

## **Maintenance Dredging**

Another need is to ensure that the Corps of Engineers continues its program to provide maintenance dredging of the main Federal channels of the port at appropriate intervals to make sure that proper dimensions are available for efficient, effective, and safe navigation.

## **Crossings**

**Bridges.** A general concern for the port is the increasing waterway traffic that requires frequent bridge openings that delay cars and trucks and/or added bridge opening restrictions, which severely hamper boat traffic. Increasing highway traffic significantly adds to congestion and delays. This particularly becomes a problem during the recreation boating season, which adds substantially to bridge opening requirements. More effective coordination, especially during peak traffic times, is needed to help alleviate the current situation. Additional vertical clearance may be required under new highway bridges and additional tunnels may be required in the future to adequately address this problem. Specific concerns were expressed regarding the dual highway and railroad bridges at Gilmerton that restrict the size of vessels that may transit upstream from this point on the Southern Branch and, consequently, hamper future industrial development in this reach of the river. Also, specific concerns were expressed with the efficiency of openings for the Jordan Bridge on the Southern Branch and the Norfolk Southern railway bridge on the Eastern Branch.

**Tunnels.** The need for utilizing tunnels in lieu of bridges for channel crossings was expressed as a concern since some believe that tunnel crossings are less restrictive for both water and highway traffic. Tunnels can, however, reduce the depth to which navigation channels can be constructed.

**Utility Crossings.** Overhead utilities can restrict the height of vessels transiting channel, and underground utilities can limit the depth of navigation channels--both impacting the size of vessels.

## **Multiple-Use Conflicts**

The various uses of the waterways in the Hampton Roads area can, at times, be incompatible with each other. Since waterways are limited in space and, as more users and uses are introduced in the water, demand and competition for space increases and conflicts may occur. Use conflicts may result in boating accidents, user complaints,

disturbances of wildlife and wildlife habitat, water quality degradation, or boat wake erosion of wetlands and/or private waterfront property. The need exists for improved waterway use management in the Hampton Roads area and for increased awareness of existing concerns by localities, resource management agencies, and the state legislature.

## **Navigation Aids**

**Better Channel Markings.** There is a need for a directional sign at the confluence of the Eastern and Southern Branches to prevent transient boats from going up the Eastern Branch looking for the Intracoastal Waterway. Also, more prominent no-wake zone signs are needed between Norfolk and Portsmouth; the existing signs are helpful but are difficult to see. Tugs, commercial boats, and pleasure craft create too much wake in this area of the river. Southbound vessels in the Elizabeth River pass too close to Portside in Portsmouth. This problem is exacerbated by the location of Harbor Towers and trees that block the line-of-sight for boat operators coming out of Portside. A red buoy on the curve of the channel near Harbor Towers would cause boat operators going southbound to make a wider turn when passing Portside.

**More Lighted Buoys.** There is a need for more lighted buoys in the Port Norfolk Reach of the channel to assist transient pleasure boat operators who are unfamiliar with the harbor.

## **Obstructions**

**Derelict Vessels, Sunken Barges, Etc.** Abandoned and/or derelict vessels, barges, and similar objects sunken in the harbor area are a concern. In addition to being aesthetically undesirable, they can adversely impact navigation safety and the aquatic environment. As an abandoned vessel ages, it breaks apart providing sources of floating debris that can cause damages to boats. Also, derelict vessels can destroy submerged aquatic vegetation and may leach toxic chemicals to the water from paint, fuel, and oil.

**Debris and Drift Material.** There is a continuous need for the collection and removal of floating debris and drift material from the waters of the harbor that may damage vessels or threaten public health, recreation, and/or the environment. Derelict objects, such as waterfront structures and sunken vessels, are a concern since they provide substantial sources for floating debris.

**Docked Boats That Obstruct View of Navigation Channel.** One concern was expressed regarding the large dolphin in the river near the confluence of the Eastern and Southern Branches of the Elizabeth River. When a large ship is docked there for repairs, it blocks the view of east-bound traffic, causing a potential hazard.

## **DREDGED MATERIAL PLACEMENT AREAS**

### **Need to Extend the Life of Craney Island Dredged Material Area and/or Locate Alternative Future Placement Sites**

It is imperative that the Hampton Roads maritime interests implement a practical and feasible long-range solution for placement of dredged material. It is important to plan for and implement suitable, well-placed, environmentally acceptable, and economically viable dredged material placement areas to ensure the effective and efficient maintenance of the port. The channels and other navigation features in Hampton Roads must be appropriately maintained if the area's nationally vital commercial and military functions are to continue. To meet the future dredged material placement needs, consideration would have to be given to the expansion of the Craney Island Dredged Material Area and/or finding, acquiring, and developing alternative sites. The provision of adequate future areas will require addressing concerns such as environmental issues, wetlands, and competing land uses.

### **Use of Craney Island Dredged Material Area for Port Development**

Port interests have long recognized the outstanding potential available to make use of part of the Craney Island Dredged Material Area for future development. Its location, adjacent to deepwater channels, presents exceptional advantages for port use.

The Virginia General Assembly has authorized the Craney Island Study Commission, which is comprised of representatives from the VPA, the City of Portsmouth, the Hampton Roads Maritime Association, and the Army Corps of Engineers, to examine current use and future expansion of Craney Island and recommend appropriate future use of the area. The potential expansion of the facility could provide areas for development of an additional container facility to accommodate future growth while providing for the future efficient and cost-effective placement of dredged material from adjacent channels.

## **ENVIRONMENTAL CONCERNS**

### **Contaminated Areas along Rivers and on River Bottoms**

Many years of industrial and commercial use have resulted in contaminants located along the shores of the harbor and in bottom sediments. The worst of these areas are located within the Elizabeth River Basin, specifically its Southern Branch. As discussed in Section III, the Elizabeth River Basin feasibility study initiated in June 1998 will address five contaminant sites within the Elizabeth River. However, there may be other problem areas within the port, that are outside the scope of the Elizabeth River Basin study.

### **Deep Channel Effects on Currents and Depths in the Vicinity of the Norfolk Naval Base**

Concern was expressed with the impacts, if any, of adjacent deep-draft channels on the currents and depths in the vicinity of the Naval Base.

### **Water Quality**

Several concerns were expressed regarding the improvement of water quality within the port. These concerns are as follows:

- Facilities should be provided for proper disposal of on-board waste, especially with respect to recreational boats and marinas;

- The direct pumping of bilge water into the harbor should be eliminated;
- Container facilities should be designed to include elements that reduce or eliminate untreated stormwater runoff, provide adequate containment areas for liquid and gas containers, and provide elements to eliminate possible contamination during transfer;
- Bulk cargo storage facilities should be designed to reduce emissions of dust and debris into air, water, and soil;
- Eliminate and/or control what is commonly referred to as “prop” dredging; and
- Provide for the proper handling of contaminated dredged material.

## **Wetlands**

Concerns have been expressed regarding the filling and draining of wetlands of the waterways of Hampton Roads over many years. This type of wetland alteration and destruction has likely reduced the diversity of fish and wildlife in the area and served to reduce water quality. Restoration of these wetlands would benefit fish and wildlife resources, improve water quality, and generally make the area more aesthetically pleasing.

## **FUNDING**

Funding is a general concern that applies to all aspects of port operation and development. As previously stated in the section describing general concerns, a primary purpose of the Plan is to prioritize the identified problems, needs, concerns, and opportunities to better facilitate the allocation of limited funds.

## **LANDSIDE CONCERNS**

### **Receiving, Storage, and Transfer Facilities**

In order to maintain a competitive port and to provide for future growth, it is imperative that the most efficient and effective facilities are in place to accommodate the transfer of cargo with the least amount of port time for ships. There is a need to ensure that sufficient storage areas are available and that transfer facilities, such as container cranes, are upgraded to accommodate larger vessels.

### **Intermodal Facilities That May Impact Navigation**

Potential issues that have been identified as significant concerns include access to port facilities, safety, costs, bridge clearances and weight limits, travel time, and transfer and connection between modes. There is a need for the port area to significantly improve the land-based transportation network that is projected to carry even greater volumes of marine freight in the future. Accelerated development throughout the region is resulting in congestion on the area's transportation infrastructure. Roads, tunnels, bridges, and rail systems that serve the port terminals have reached and, in some cases, surpassed capacity. Also, channel dredging projects have been identified as one of the specific infrastructure needs that substantially impacts intermodal transportation in the Hampton Roads area. Concerns specific to bridges and tunnels and to navigation channel needs were discussed previously in this section.

### **Land for Future Development**

Land suitable for maritime facilities is at a premium within the port area. It is necessary that every effort be made to maximize existing land use. Although some undeveloped land remains adjacent to deep-water channels within the port, the major opportunity for the future may be the redevelopment of existing properties and more efficient use of existing land areas. A survey of the harbor area indicates a significant amount of under-developed properties located adjacent to deep water channels. The potential use of the Craney Island Dredged Material Area for port development, as

discussed previously, would provide a substantial amount of prime waterfront property located adjacent to deep navigation channels for future commercial maritime use.

### **Police and Fire Protection**

With respect to this specific category, only one concern was expressed during the survey of port users. A potential problem may exist with the capability to deal with spills of hazardous material and petroleum products during emergency situations, such as hurricanes. Although a coordinated emergency response system is currently in place, the severity of the problem and the extent of the risk during emergencies may be beyond the capability of the system and is a concern that warrants consideration.

### **Productive Workforce**

Economic activity directly and indirectly associated with the port creates a need for a substantial number of workers. As indicated previously in Section I, over 128,000 people in Virginia are employed in port-related jobs. It is important that skilled workers are available within the area surrounding the port to satisfy future employment needs. Also of comparable importance is the continued cooperative attitude between labor and management, which is essential to maintaining an efficient and competitive port.

### **Impact of Port Growth on Host Cities**

A concern was expressed with the impact of port development in Newport News, Norfolk, and Portsmouth. Although the positive economic impacts of the VPA marine terminals are dispersed throughout the Hampton Roads area and the Commonwealth, the significant operational impacts of their presence such as land acquisition, rail and truck traffic congestion, and tax exempt status are localized in the three host cities. Some have indicated a need for a partnership with the host cities to accommodate and foster continued port growth while allowing the port to achieve its potential and the Commonwealth and host cities to enjoy the associated benefits.



## **NAVIGATION INFORMATION**

The first five items listed in Table IV-1 under "Navigation Information" are depths, tides, currents, waves, and weather. These are required basic navigation data, which are inter-related, and, therefore, their discussion is combined. The need as expressed by port users is the ability to get vessels in and out of the port as fast as possible, with maximum loads and under safe conditions. To accomplish this requires accurate and timely information, permitting vessel operators to make greater and more efficient use of existing navigation conditions. Currently, operators rely essentially on charts that are based on average conditions and not on actual data for the specific time of sailing. The National Oceanic and Atmosphere Administration has developed a Physical Oceanographic Real Time System (PORTS) to support maritime commerce and navigation safety that is presently in use at several areas, including the lower Chesapeake Bay, Houston/Galveston, New York/New Jersey Harbor, San Francisco Bay, and Tampa Bay. The system provides accurate real-time oceanographic and meteorological information tailored to the specific needs of individual ports. State-of-the-art instruments measure water level, water temperature, conductivity, wind speed, wind direction, wind gusts, air temperature, and barometric pressure at various locations in a harbor. These data are collected and processed by remote data collection platforms, then transmitted to a centralized data acquisition system. The information is then formatted into text, voice, or graphic outputs. The data are updated every six minutes and can be accessed immediately via the Internet, modem dial-in, or telephone. You can access PORTS on its Internet address ([www.opsd.nos.noaa.gov](http://www.opsd.nos.noaa.gov)).

## **Planning and Management Tools**

Concern was expressed regarding the need for certain planning and management tools for effective port development. These may include:

- Environmental database development, including information on previous port development efforts, studies done in connection with them, and monitoring results and other pertinent data made readily available through today's new media and data dissemination formats;

- Hydrodynamic model development, which is a new capability using computer simulation in place of the physical models that were once used to evaluate the response of an estuary to physical changes; numerical models, once calibrated and verified at appropriate scales for Hampton Roads waterways, can be used to answer many “what if” questions very early in the planning process; and
- Observational systems development, which is another new capability to monitor more easily the "vital statistics" of estuarine behavior through state-of-the-art oceanographic instrumentation; new instruments such as acoustic Doppler current profiling systems offer innovative means of observing waves, currents, water temperature, and suspended sediment concentration.

### **Twenty-Four Hour Side Scan Sonar Capability**

Concern was indicated for access to 24-hour side scan sonar capability within the port. This would permit a more rapid determination of the extent of a channel blockage due to sunken objects such as ships, barges, buoys, etc., and it would assist in keeping the harbor channels open to vessel traffic.

## **RULES AND REGULATIONS**

### **Dredging Permits**

A concern was expressed regarding the continued availability of appropriate permits for commercial facilities located within the port.

### **Unnecessary and Burdensome**

Concern was indicated for the increasing number of rules and regulations required to do business within the port. Some believe that many of the rules and regulations are unnecessary, and they make it difficult for small companies to do business within the port.

## **SUPPLEMENTAL FACILITIES**

### **Turning Basins**

A general concern, with respect to turning basins, is that they be sufficient in size, number, and location to safely and efficiently accommodate existing and prospective vessel traffic; in addition, that they be commensurate with any future increased channel dimensions.

### **Piers and Wharves**

The maintenance of a competitive port that provides for future growth requires that adequate piers and wharves are available to accommodate the size and type of vessels calling at the port now and in the foreseeable future. Piers and wharves must be sufficient to permit ships to load and unload as efficiently as possible, reducing in-port time to a minimum.

### **Berthing and Mooring Areas**

Adequate berthing and mooring areas are necessary to permit ships to be loaded and unloaded in a timely manner without having to wait in anchorage areas at considerable costs. There is a need to ensure that there are sufficient berths for the number and size of vessels calling this port now and in the foreseeable future. This need will be exacerbated by the expected increase in the number and size of ships calling at the port, particularly container vessels.

### **Additional Dolphins for Commercial Vessels at the Great Bridge Lock**

A concern was indicated for more dolphins at the Great Bridge Lock for larger vessels. Currently, there is space for only two commercial vessels, and the area can become very congested. This situation is exacerbated during the spring and fall seasons when many pleasure boats are passing through the area on the Atlantic Intracoastal Waterway.

## **Recreational Boating Facilities**

Concerns were indicated for specific additional recreational boating facilities within the Hampton Roads harbor area. Some additional facilities that were suggested include launching ramps, pump-out stations, reasonably accessible and affordable pier spaces especially for large sailing vessels, and harbor of refuge spaces for transient pleasure craft.

## **PRIORITIZATION CRITERIA AND RANKING**

Time and resources must be efficiently allocated to properly address the most important identified problems, needs, concerns, and opportunities facing the port. In order to effectively evaluate the many and various concerns within the port, it is necessary to develop a prioritized list. This portion of the section presents the relevant criteria used in developing the priority ranking of previously identified concerns. These criteria provide a checklist when weighing the individual concerns to ensure that all pertinent aspects are considered in the decision process. The following is an alphabetical list of items that are considered important in establishing a priority of action:

- Benefits
- Business: Attraction and location of new domestic and foreign business
- Commerce
- Competitiveness of the port
- Congestion, delays, and losses
- Costs
- Dredging cost efficiency
- Economic impacts
- Efficiency/productivity
- Environmental quality
- Fiscal impact on host cities
- Growth of port
- Landside development

- Mega ship operation
- Military importance
- Safety
- Seasonal pleasure boat operation
- Vessel traffic

The relative importance of each criterion varied with respect to the problem, need, concern, or opportunity to which it was being applied and to the individual making the judgement. A committee of port users and interests, referred to as Circle "A" stakeholders and identified in Section I, was responsible for assigning priority rankings to each of the identified concerns. The Circle "A" stakeholders considered the importance of each prioritization criterion as it applied to each concern in making their evaluations. The individual numeric rankings were then combined to develop a composite list based on the total assigned values. The following table lists the problems, needs, concerns, and opportunities as just described.

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES

Concern		Assigned numeric ranking
I.	Anchorage	
A.	Sewells Point: Need to deepen the westernmost anchorage opposite Sewells Point (K-2) from 40 feet to the authorized depth of 45 feet (1).....	18
B.	Sewells Point: Need to increase the swinging radius in the easternmost, 45-foot-deep anchorage opposite Sewells Point (K-1) from the authorized radius of 1,200 feet to the recommended radius of 1,500 feet (1).....	22
C.	Sewells Point: Need to make broader use of the anchorages opposite Sewells Point .....	19

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

Concern		Assigned numeric ranking
D.	Lamberts Point: Need to make broader use of the anchorages opposite Lamberts Point .....	40
E.	Newport News: Need to deepen both anchorages opposite Newport News from 40 feet to the authorized depth of 45 feet .....	29
F.	Hampton Roads Bridge-Tunnel: Need to deepen the 1,500-foot swinging radius anchorage (F) just west of the Hampton Roads Bridge-Tunnel from 50 feet to the authorized depth of 55 feet (1).....	16
G.	Need additional anchorages .....	49
II. Channels		
A. Depths		
1.	Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point .....	5
2.	Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point .....	7 (tie)
3.	Norfolk Harbor Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point .....	2
4.	Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels.....	6
5.	Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad Bridge.....	10 (tie)
6.	Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge .....	12

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

Concern		Assigned numeric ranking
7.	Channel to Newport News: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet .....	14
8.	Channel to Newport News: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet .....	9
B.	Widths	
1.	Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (1).....	10 (tie)
2.	Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (1).....	15
C.	Maintenance dredging: Continued and timely maintenance of port channels.....	1
D.	Crossings	
1.	Bridges .....	23
2.	Tunnels.....	17
3.	Utility crossings .....	42
E.	Multiple-use conflicts: Potential conflicts between recreational, commercial, and military uses .....	33
F.	Navigation aids	
1.	Better channel markings .....	26 (tie)
2.	More lighted buoys .....	37
G.	Obstructions	
1.	Derelict vessels, sunken barges, etc .....	30 (tie)
2.	Debris and drift material .....	48
3.	Docked boats that obstruct view of navigation channel .....	51

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

Concern		Assigned numeric ranking
III.	Dredged Material Placement Areas	
A.	Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites .....	3
B.	Use of Craney Island Dredged Material Area for port development .....	4
IV.	Environmental Concerns	
A.	Contaminated areas along rivers and on river bottoms.....	20
B.	Deep channel effects on currents and depths in the vicinity of the Norfolk Naval Base .....	43
C.	Water quality.....	13
D.	Wetlands .....	28
V.	Funding .....	7 (tie)
VI.	Landside Concerns	
A.	Receiving, storage, and transfer facilities .....	38
B.	Intermodal facilities that may impact navigation.....	21
C.	Land for future development .....	45
D.	Police and fire protection .....	47
E.	Productive workforce.....	50
F.	Impact of port growth on the host cities .....	46
VII.	Navigation Information	
A.	Depths .....	32
B.	Tides.....	25
C.	Currents.....	24
D.	Waves.....	41
E.	Weather .....	34 (tie)
F.	Planning and management tools .....	39
G.	Twenty-four hour side scan sonar capability .....	34 (tie)
VIII.	Rules and Regulations	
A.	Dredging permits .....	44
B.	Unnecessary and burdensome.....	52



Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

		Assigned numeric ranking
Concern		
IX.	Supplemental Facilities	
A.	Turning basins.....	30 (tie)
B.	Piers and wharves .....	26 (tie)
C.	Berthing and mooring areas .....	36
D.	Additional dolphins for commercial vessels at Great Bridge Lock .....	54
E.	Recreational boating facilities.....	53

(1) Please see anchorage designations for (F), (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

It is not practical to evaluate all of the identified problems, needs, concerns, and opportunities that were identified by port users and interests, due to constraints of time and resources. Therefore, only those concerns ranked number 1 to 15 are evaluated in the Resolution Section that follows.

## **SECTION V**

## **RESOLUTION**

---

## **SECTION V**

### **RESOLUTION**

---

#### **GENERAL**

This section evaluates the most important problems, needs, concerns, and opportunities based on the prioritized rankings presented in Section IV. The evaluations are accomplished in the order of the composite numeric rankings assigned by Circle "A" stakeholders and include preliminary estimates of costs, benefits, and potential impacts on port operation and development. Monetary values for costs and benefits are based primarily on available information supplemented by sufficient new data where required to support conclusions and recommendations for the specific concern being evaluated. The section also includes a discussion of the responsibility for implementing the necessary action to facilitate resolution of the concern, as well as cost-sharing implications. Following the evaluations, Section VI will incorporate the individual concerns into a long-range comprehensive planning strategy that provides for the most efficient development of the port's navigation features and ensures that these features effectively accommodate future use and growth.

#### **LISTING OF CONCERNS TO BE EVALUATED**

All of the concerns identified by stakeholders were described and prioritized in Section IV; however, only the most important concerns as prioritized by Circle "A" stakeholders are evaluated in this section. The following table lists the concerns that are discussed and evaluated in subsequent paragraphs.

Table V-1. PRIORITIZED CONCERNS SELECTED FOR EVALUATION

Concern	Priority ranking
Maintenance dredging: Continued and timely maintenance of port channels	1
Norfolk Harbor Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point	2
Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites	3
Use of Craney Island Dredged Material Area for port development	4
Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point	5
Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels	6
Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point	7 (tie)
Funding	7 (tie)
Channel to Newport News: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet	9
Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad bridge	10 (tie)
Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (1)	10 (tie)
Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge	12
Water quality	13

Table V-1. PRIORITIZED CONCERNS SELECTED FOR EVALUATION  
(Cont'd)

<u>Concern</u>	<u>Priority ranking</u>
Channel to Newport News: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet	14
Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated (1)	15
(1) Please see anchorage designations for (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).	

### **CONCERN NUMBER 1**

#### **MAINTENANCE DREDGING: CONTINUED AND TIMELY MAINTENANCE OF PORT CHANNELS**

##### **DESCRIPTION**

This concern relates to the need to ensure that the Corps of Engineers continues its program to provide maintenance dredging of the main Federal channels of the port at appropriate intervals to make sure that proper dimensions are available for efficient, effective, and safe navigation.

##### **PROPOSED ACTION**

Full authorized project dimensions are maintained within the harbor where feasible and justified. The maintenance of full project dimensions often requires advance maintenance dredging, which is the additional depth and/or width specified to be dredged beyond the project channel dimensions for the purpose of reducing overall maintenance costs by decreasing the frequency of dredging. In some of the Federally authorized

channels and anchorages, the current navigation needs are met by dredging the project channel or anchorage area to less than the authorized depth and/or width. Channel conditions are surveyed frequently to determine existing conditions, and necessary actions, including the scheduling of appropriate funding, are routinely accomplished by the Norfolk District Corps of Engineers.

## **PLAN ACCOMPLISHMENTS**

Provision of appropriate maintenance dredging of channels, anchorages, and turning basins within the harbor permit the safe and efficient movement of vessels of all types into and out of the port. Vessels ranging from large bulk coal carriers, Navy ships, container ships, commercial work boats, recreational craft, and others make daily use of the maintained channels. The maintained channels support substantial port industry and military activities, and they provide significant economic impacts to the Hampton Roads area, the region, and the nation as discussed in Section I.

## **ANALYSES**

Valid economic analyses are accomplished periodically to determine the needs of using traffic and to ensure the continued justification of maintenance expenditures.

### **Costs**

The Corps spends an average of \$7.0 million annually to maintenance dredge an annual average of 1.6 million cubic yards of material from navigation projects within the Hampton Roads area and related activities.

### **Benefits**

Maintenance dredging of the waterways that comprise the Port of Hampton Roads benefits a wide range of port activity. All vessels utilizing the port received benefits from the channels, turning basins, and anchorage areas that are periodically maintained. In the absence of maintenance dredging, channels would shoal, resulting in vessel delays, increased transportation costs, vessel damage, and other hardships on the port's military,

industrial, commercial, and recreational interests. Appropriate maintenance dredging keeps the port running efficiently, effectively, and safely.

### **Environmental Impacts**

Maintenance dredging efforts of the Corps of Engineers are governed by the environmental compliance requirements and procedures set forth in the Clean Water Act and other applicable Federal, state, and local environmental laws and regulations. Environmental analyses and documentation have been accomplished and will continue to be updated and kept current for all maintenance dredging activities within the Hampton Roads harbor area.

### **DIVISION OF PLAN RESPONSIBILITY**

For the Federal projects that comprise the Port of Hampton Roads, the Corps of Engineers is responsible for appropriate and timely maintenance dredging. Local owners and operators are responsible for maintaining their access channels and berthing areas. In planning new navigation projects, the present policy is to require local interests to provide, without cost to the United States, all suitable areas required for initial and subsequent placement of dredged material. The WRDA 96 modified the WRDA 86 to include dredge material facilities (such as retaining dikes, bulkheads, and embankments) as part of the general navigation features of a project and cost shared between the Federal Government and the non-Federal sponsor on the same basis as other project features. Owing to great foresight, the port is very fortunate to have the Craney Island Dredged Material Area available where most of the material from maintenance dredging activities within the port is placed. Craney Island is an income-producing facility that receives funds from toll charges levied on non-Corps of Engineers users.

### **CONCLUSIONS**

The Norfolk District Corps of Engineers does an excellent job in maintaining the many waterways that comprise the Port of Hampton Roads. Proper and timely maintenance dredging will continue into the future, depending upon appropriate and

timely funding and the continued availability of the Craney Island Dredged Material Area or a similar alternative placement area.

## **CONCERN NUMBER 2**

### **NORFOLK HARBOR CHANNEL: NEED TO DEEPEN THE OUTBOUND LANE FROM 50 FEET TO THE AUTHORIZED DEPTH OF 55 FEET TO LAMBERTS POINT**

#### **DESCRIPTION**

This concern expresses a need to deepen the elements of the outbound lane of the Norfolk Harbor Channel from their currently maintained depth of 50 feet to the authorized depth of 55 feet to Lamberts Point. The 55-foot outbound element is a separable element of the Norfolk Harbor and Channels project authorized by the WRDA 86. The concern, identified by stakeholders and prioritized by Circle "A" members, is related to improvements to outbound navigation on the southside of the Hampton Roads harbor.

#### **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the outbound channel element of the Norfolk Harbor Channel to 55 feet. As discussed in Section II, it would also require the dredging of the approach channels (the Atlantic Ocean Channel and the Thimble Shoal Channel), anchorages (Anchorage F and Sewells Point), and appropriate access channels and berthing areas. The access channels and berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 55-foot main channel depth. In addition, some wrecks would have to be cleared, a water main would have to be relocated or replaced, a tunnel cover would have to be constructed to protect the Chesapeake Bay Bridge-Tunnel, which runs under the Thimble Shoal Channel, and aids to navigation would have to be moved and/or installed.



Dredged material from the Corps of Engineers project would be placed in the Dam Neck Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process. Suitable material from the Thimble Shoal and Atlantic Ocean Channels would be considered for nourishing area beaches. During the PED phase, consideration would be given to placing dredged material in the Craney Island Dredged Material Area, which could result in a significant reduction in project cost.

## **PLAN ACCOMPLISHMENTS**

Provision of the 55-foot-deep outbound channel elements would primarily serve the large bulk coal carriers departing the southside of the port with loaded drafts of 50 feet and greater. It would enable owners and operators of these ships to utilize the additional cargo-carrying capacity of their vessels, thereby achieving savings in transportation costs. It would allow modern deep-draft vessels to operate in a more efficient, safe, and economical manner and enable the port to maintain a competitive position in the world coal market. It is estimated that the deepening of the Thimble Shoal and Atlantic Ocean Channels would provide over 6 million cubic yards of suitable quality dredged material for nourishing area beaches under authority of Section 145 of the WRDA 76, as modified by Section 933 of the WRDA 86.

## **ANALYSES**

The most recent detailed analyses of costs, benefits, environmental, and other impacts of the 55-foot-deep outbound channel elements were accomplished in the September 1989 Supplemental Engineering Report. Analyses accomplished subsequent to the 1989 Supplemental Engineering Report have been limited primarily to updating costs in support of periodic budget submittals and keeping the local sponsor advised of the project status. The most recent estimate, based on October 1998 price levels, was accomplished to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 26 million cubic yards of material would be dredged during the initial construction as shown in Table II-3. The costs for this specific concern are based on estimates prepared for the entire 55-foot outbound channel element. It is likely that some of these values would be modified if this concern was accomplished separately from the total 55-foot outbound channel project; however, the estimates are presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. In addition, the water main and tunnel cover items include engineering and design and supervision and administration costs since these are totally non-Federal responsibilities. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-2. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 2

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,255
Dredge Thimble Shoal Channel	28,121
Dredge Norfolk Harbor Channel	24,814
Dredge Hampton Roads Anchorage F (1)	9,510
Dredge Sewells Point Anchorage	18,141
Remove wrecks	<u>868</u>
Subtotal	97,709
Engineering and design (2%)	1,954
Supervision and administration (4%)	<u>3,908</u>
Total	103,571
Relocate/replace 36-inch water main	5,006
Construct Thimble Shoal tunnel cover	<u>4,184</u>
Total	9,190
Grand total	112,761

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

### **Operation and Maintenance Costs**

The incremental increase in average annual operation and maintenance costs, based on the maintenance cycles and cubic yardage as shown in Table II-3, is estimated to be \$1.1 million at October 1998 price levels.

**Benefits**

The benefits attributable to the 55-foot outbound channel are based primarily on transportation savings accruing to the export of coal via deeper channels as described under Plan Accomplishments. This was the premise in the Norfolk Harbor and Channels, Virginia Deepening and Disposal Feasibility Report dated July 1980, and it continues to be the primary force driving the need for deeper outbound channels. The most recent detailed analysis of the benefits--primarily transportation savings, which would accrue to the outbound 55-foot-deep channel element--was accomplished in the 1989 Supplemental Engineering Report. In this analysis, based on October 1989 price levels, the total average annual transportation savings were estimated at \$22.2 million. These savings, however, accrued to both the northside and southside of the port. Although no separation of benefits was accomplished between the northside and southside of the harbor since both sides were considered essential for a viable project, it is estimated that about 60 percent of the savings would accrue to the southside, based on the most recent data available regarding coal exports.

**Environmental Impacts**

Substantial environmental studies were accomplished during the period from 1982 to 1985 by Federal agencies, state and university research laboratories, and private contractors under provisions of Public Law 99-88. Detailed information regarding the methods, materials, and results of these studies may be found in the complete documents, which are available on microfiche from National Technical Information Services, Washington, D.C. (see Appendix E, Table E-4 for the Internet address). The main emphasis of the effort was to determine and reasonably assess the impacts associated with the deepening of the channels and related placement of the dredged material. Some of the more important studies included effects on benthic resources, commercial benthos, non-commercial benthos, finfish, plankton, phytoplankton, zooplankton, sediment quality, seabed stability, and cultural and archaeological resources. All NEPA and related documentation have been fully satisfied but will need to be updated prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II, the 55-foot outbound element is part of the Norfolk Harbor and Channels project, which is authorized, but not yet constructed. The construction of this element of the project would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate funding. In accordance with the WRDA 86, the VPA would be responsible for 60 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA. There are also funding requirements for project implementation from the City of Norfolk, the Chesapeake Bay Tunnel District Commission, and the private pier facility owners and operators.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional channel depths in the Federal channels, including the Atlantic Ocean Channel, would be accomplished by the Corps of Engineers. In accordance with the provisions of Section 101(b) of the WRDA 86, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would be the responsibility of the Commonwealth. Maintenance dredging of access channels and berthing areas would be the responsibility of the owners and operators of adjacent facilities and would require authorization from the Norfolk District Regulatory Branch.

### **Cost Sharing**

The cost-sharing requirements for the 55-foot outbound element are based on the provisions of the WRDAs 86, 88, and 96 and current guidance and policies. The following table shows the apportionment of Federal and non-Federal construction costs. The incremental increase in average annual operation and maintenance costs associated

with this project is estimated at \$1.1 million, of which \$550,000 would be a Federal responsibility and \$550,000 a non-Federal responsibility.

Table V-3. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 2

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,255	6,502.0	9,753.0
Dredge Thimble Shoal Channel	28,121	11,248.4	16,872.6
Dredge Norfolk Harbor Channel	24,814	9,925.6	14,888.4
Dredge Hampton Roads Anchorage F (1)	9,510	3,804.0	5,706.0
Dredge Sewells Point Anchorage	18,141	7,256.4	10,884.6
Remove wrecks	<u>868</u>	<u>347.2</u>	<u>520.8</u>
Subtotal	97,709	39,083.6	58,625.4
Engineering and design (2%)	1,954	781.6	1,172.4
Supervision and administration (4%)	<u>3,908</u>	<u>1,563.2</u>	<u>2,344.8</u>
Total	103,571	41,428.4	62,142.6
Relocate/replace 36-inch water main	5,006	0.0	5,006.0
Construct Thimble Shoal tunnel cover	<u>4,184</u>	<u>0.0</u>	<u>4,184.0</u>
Total	9,190	0.0	9,190.0
Grand total	112,761	41,428.4	71,332.6

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## **CONCLUSIONS**

This specific concern relates only to the southside of the Hampton Roads harbor and does not include all of the elements of the 55-foot outbound channel projects, specifically, the Channel to Newport News. This concern could be more logically addressed with the construction of the entire 55-foot outbound element of the Norfolk Harbor and Channels project. Accordingly, this specific concern will be considered for combination with appropriate prioritized concerns in Section VI to develop a long-range, comprehensive planning strategy for the Port of Hampton Roads.

### **CONCERN NUMBER 3**

#### **NEED TO EXTEND THE LIFE OF THE CRANEY ISLAND DREDGED MATERIAL AREA AND/OR LOCATE ALTERNATIVE PLACEMENT SITES**

#### **DESCRIPTION**

This concern expresses a need to ensure a practical and feasible long-range solution for the future placement of dredged material from construction and maintenance activities within the Port of Hampton Roads. Periodic dredging requires the placement of material dredged from numerous channels, anchorages, berthing areas, turning basins, and other areas making up the port complex. Continuing vital dredging, maintaining appropriate depths, and preserving the port's economic health are all considerations that account for the identification of this concern by stakeholders and its high priority.

#### **PROPOSED ACTION**

The proposed actions necessary to address the above-described concern would include the consideration of the expansion of the Craney Island Dredged Material Area (such as construction of a fourth cell on its east side), placement of dredged material at alternative confined sites, ocean placement of suitable material, beneficial uses of dredged material, and a combination of dredged material management plans. Each of these alternative considerations would have to be evaluated in terms of providing the most economical and environmentally acceptable plan for the long-term placement of



dredged material from navigation projects in the Port of Hampton Roads and adjacent waters.

## **PLAN ACCOMPLISHMENTS**

The Port of Hampton Roads consists of commercial maritime facilities in cities with access to the lower James River, lower Chesapeake Bay and its tributaries, and the Elizabeth River. Waterborne commerce is vital to the adjacent cities, as well as to the Commonwealth of Virginia, to the East Coast, and to the nation. While Hampton Roads is a natural harbor, the depths of many of its channels cannot accommodate deep-draft vessels without periodic dredging. In order to provide for current and future shipping interests, channels must be maintained and even deepened. The provision of long-term placement capability for future dredging operations will ensure that the commercial and military navigation requirements will be satisfied, and the port will continue to thrive and grow.

## **ANALYSES**

A number of studies have been conducted that are related to the long-term dredged material placement needs. These include the 1980 Feasibility Report; 1986 General Design Memorandum; Technical Report EL-81-11, "Development of a Management Place for Craney Island Disposal," published by the Army Corps of Engineers Waterways Experiment Station in December 1981; "Effects of Norfolk Harbor Deepening on Management of Craney Island Disposal Area" dated April 1983; "Site Operations and Monitoring Report 1980 to 1987" dated February 1989 and prepared by the Waterways Experiment Station; Dam Neck Ocean Disposal Site studies that led to final designation from the EPA in March 1988; Norfolk Harbor and Channels, Virginia, Long-Term Disposal (Inner Harbor) dated June 1990; Norfolk Disposal Site studies that led to final designation by the EPA in 1993; Norfolk Harbor and Channels, Virginia, Long-Term Dredged Material Management dated July 1994; and various Section 933 reports referenced in Section III. A reconnaissance study completed in March 1999 determined a Federal interest in proceeding to a feasibility study to evaluate the potential eastward expansion of the Craney Island Dredged Material Area and to

evaluate other potential alternative long-term placement areas. Appropriate analyses regarding construction costs, operation and maintenance costs, benefits, and environmental and other impacts will be included as part of the feasibility report initiated in April 1999 and scheduled for completion in March 2002.

### **Costs**

The evaluation of alternative long-term dredged material placement sites requires the comparison of unit placement costs, i.e. cost per cubic yard. All costs involved in placing the dredged material are included in order to arrive at a valid comparison. The most recent cost analyses were accomplished as part of the Long-Term Dredged Material Management Report dated June 1990. With all of the plans considered, it was clear that the costs of managing dredged material in the port will increase substantially over what they have been in the past. The current toll charges for the Craney Island Dredged Material Area are \$0.86 per cubic yard for direct placement and \$2.30 per cubic yard for deposition into the Craney Island Rehandling Basin. The feasibility study discussed previously will determine the least costly viable plan, which is environmentally and socially acceptable to accommodate long-term dredged material placement in the future.

### **Benefits**

The benefits attributable to the provision of a long-term placement area for dredged material for the port are widespread and substantial and accrue to numerous private and government interests. The assurance of an economical placement area provides for continued maintenance dredging and navigation improvements for the port and helps maintain the port's competitive position in world markets. Provision of a long-term placement area through an eastward expansion, serving as a least-costly alternative, will provide monetary benefits that are specifically quantified for dredged material placement, in addition to the millions of dollars of transportation savings attributable to maintenance dredging of the port channels. The continued maintenance and improvements permit safe and effective commercial and military operations into the foreseeable future.

## **Environmental Impacts**

The environmental impacts associated with all potential long-term dredged material placement areas will require careful evaluation. All requirements of the NEPA, the Clean Water Act, and other applicable statutes will have to be satisfied. The necessary environmental studies will be accomplished as part of the previously discussed feasibility report scheduled for completion in March 2002.

## **DIVISION OF PLAN RESPONSIBILITY**

Federal legislation requires the Commonwealth of Virginia, as the local cost-sharing sponsor, to provide the necessary placement areas for dredged material from Congressionally-authorized channels. Accordingly, the VPA, acting as the statutory agent for the Commonwealth, would be responsible for all construction and operation and maintenance costs associated with a new and/or expanded placement facility to serve the port; however, the WRDA 96 modified the WRDA 86 to include dredged material facilities as part of the general navigation features of a project. In this regard, the dredged material facilities could be cost shared between the Federal Government and the non-Federal sponsor on the same basis as the remainder of project features. This may permit up-front financing of construction costs by the Federal Government with reimbursement over time through the collection of toll charges. The previously discussed feasibility study will carefully evaluate all costs, benefits, and environmental impacts to determine the optimum Federal involvement and cost-sharing requirements in the provision of long-term dredged material placement.

## **CONCLUSIONS**

This concern is extremely important to the maintenance and growth of the port and is directly related to the other identified concerns. A current feasibility study addressing this problem is scheduled for completion in March 2002, and it should provide a satisfactory solution. The concern, however, will be included in Section VI due to the importance and critical relationship to the other prioritized concerns of ensuring a practical and feasible long-range solution for the future placement of dredged material within the port.

#### **CONCERN NUMBER 4**

### **USE OF CRANEY ISLAND DREDGED MATERIAL AREA FOR PORT DEVELOPMENT**

#### **DESCRIPTION**

This concern expresses a need to make use of part of the Craney Island Dredged Material Area for future port development. The potential expansion of the facility could provide an ideal area for necessary future port development while also addressing Concern Number 3, the provision of a future efficient and cost-effective placement area for dredged material from adjacent waterway.

#### **PROPOSED ACTION**

Specific actions have already been put in place to help achieve the resolution of this concern. The Virginia General Assembly has authorized the Craney Island Study Committee, which is comprised of representatives from the VPA, the City of Portsmouth, the Hampton Roads Maritime Administration, the Virginia Pilot Association, and the Army Corps of Engineers, to examine the current use and future expansion of the Craney Island Dredged Material Area and to recommend appropriate future uses of the area. A progress report dated December 1997 was sent to the Senate Finance and House Appropriations Committee of the General Assembly of Virginia. The report concluded that the expansion of the Craney Island Dredged Material Area is critically important to the future of the port in maintaining the capability to dredge at an economical rate and to be able to expand the port in order to meet the expected needs resulting from its projected growth. A second related action resulted from the reconnaissance report, previously discussed under Concern Number 3, which determined that a Federal interest exists in accomplishing a feasibility study to evaluate the future long-term need for dredged material placement areas, including the eastward expansion of the Craney Island Dredged Material Area.

## **PLAN ACCOMPLISHMENTS**

The location of Craney Island Dredged Material Area adjacent to deep-water channels provides outstanding advantages for port use. As previously discussed in Section I, the VPA is moving forward with its 2010 Plan, which will effectively double the container-handling capacity of the Commonwealth-owned general cargo terminals; however, projected growth is expected to quickly use up this increased capacity requiring the provision of a fourth marine terminal. Section I also describes the increase expected in both the amount of containerized shipments and in the size of vessels involved in this trade. The VPA projects the need for a fourth terminal to accommodate the expected rapid increase in container traffic. Also, according to a study conducted by the U.S. Department of Transportation, Office of Intermodalism entitled, "The Impacts of Changes in Ship Design on Transportation Infrastructure and Operations" dated February 1998, mega ships are being constructed that require channel depths up to 50 feet in order to more efficiently transport containers. The use of Craney Island Dredged Material Area for future port development, such as a fourth container terminal, would help provide for continued port growth and would keep the Port of Hampton Roads, as well as the nation, competitive in the world container market.

## **ANALYSES**

The discussion contained under Concern Number 3 is equally applicable to this concern. The VPA's 2010 Plan discussed in Section I provides pertinent analyses regarding future needs for port development. Additional pertinent analyses will be contained in the previously mentioned feasibility study expected to be completed in March 2002.

### **Costs**

No specific costs have been developed for the use of Craney Island Dredged Material Area for future port development.

## **Benefits**

Although no monetary quantification of potential benefits attributable to the use of Craney Island Dredged Material Area for Port Development has been accomplished, it is obvious that such values would be widespread and substantial. Direct benefits would accrue as a result of increased commodity movements and corresponding waterborne transportation savings resulting from the additional terminal facilities adjacent to deep-water channels. Expansion of terminal facilities would also increase employment, payroll, and tax revenues within the region, thus providing additional positive economic impacts.

## **Environmental Impacts**

The environmental impacts associated with the development of port facilities at Craney Island Dredged Material Area would require careful evaluation in a river system already stressed due to existing intensive development by government, commercial, and industrial facilities. The requirements of the NEPA and all other Federal, state, and local environmental laws and regulations would be addressed as part of the feasibility report scheduled for completion in March 2002.

## **DIVISION OF PLAN RESPONSIBILITY**

In accordance with the WRDA 86, as amended, the provision of dredged material placement areas is the responsibility of the non-Federal sponsor; however, the WRDA 96 modified the WRDA 86 to include dredged material facilities as part of the general navigation features of a project. Accordingly, the dredged material facilities could be cost shared between Federal and non-Federal interests on the same basis as the remainder of the project features. It may be possible for the Federal government to finance the costs of constructing an expansion of Craney Island Dredged Material Area with reimbursement over time through the collection of toll charges. Special non-Federal cost sharing may also apply for project purposes other than for the expansion of placement capacity. The previously mentioned feasibility study will examine, in detail, the cost sharing requirements for this specific concern.

## **CONCLUSIONS**

This concern is directly related to and is an integral part of the previously discussed Concern Number 3. The potential expansion of the Craney Island Dredged Material Area and the subsequent construction of a fourth general cargo terminal on Craney Island will be evaluated in the ongoing feasibility study. Both concerns will be included in Section VI.

### **CONCERN NUMBER 5**

#### **NORFOLK HARBOR CHANNEL: NEED TO DEEPEN THE INBOUND LANE FROM 45 FEET TO 50 FEET TO LAMBERTS POINT**

### **DESCRIPTION**

This concern expresses a need to deepen the elements of the inbound lane of the Norfolk Harbor Channel from their currently maintained depth of 45 feet to a depth of 50 feet to Lamberts Point. The 45-foot inbound element is a separable element of the Norfolk Harbor and Channels project authorized by the WRDA 86. The concern, identified by stakeholders and prioritized by Circle "A" members, is related to improvements to inbound navigation on the southside of the Hampton Roads harbor.

### **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the inbound channel element of the Norfolk Harbor Channel to 50 feet. As discussed in Section II, it would also require the dredging of the Thimble Shoal Channel and appropriate access channels and berthing areas. This construction would provide a full-width 50-foot channel for the port. The access channels and berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 50-foot main channel depth.

Dredged material from the Corps of Engineers project would be placed in the Dam Neck Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process.

Suitable material from the Thimble Shoal Channel would be considered for nourishing area beaches. During the PED phase, consideration would be given to placing dredged material in the Craney Island Dredged Material Area, which could result in a significant reduction in project cost.

## **PLAN ACCOMPLISHMENTS**

Provision of the 50-foot-deep inbound channel elements would permit the port to safely and efficiently accommodate larger container ships that are transporting increasing amounts of containerized cargo. The Plan would also provide a one-level channel at 50 feet deep over authorized/recommended widths.

## **ANALYSES**

Analyses accomplished on this specific concern have been in connection with the entire Norfolk Harbor and Channels project. There have been no separate economic evaluations made of the 50-foot inbound channel elements. The most recent detail cost data for this element are contained in the 1986 General Design Memorandum. Since completion of this document, cost estimates based on price level increase only have been developed to support budget requests and to keep the local sponsor informed. The most recent estimate, based on October 1998 price levels, was accomplished to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 3,841,000 cubic yards of material would be dredged during the initial construction as shown in Table II-3. These cost estimates are presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are the responsibility of each respective user, are not included in these estimates. In addition, the estimates do not



include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-4. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 5

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Thimble Shoal Channel	12,150
Dredge Norfolk Harbor Channel	<u>7,601</u>
Subtotal	19,751
Engineering and design (2%)	395
Supervision and administration (4%)	<u>790</u>
Total	20,936

### **Operation and Maintenance Costs**

Based on experience with the maintenance of the 50-foot outbound element, it is anticipated that there will be no significant increase in the average annual quantity of maintenance material and, consequently, no incremental average annual maintenance costs associated with this concern.

**Benefits**

No quantification of monetary benefits has been accomplished for the 50-foot-deep inbound lane of the Norfolk Harbor Channel; however, it is expected that substantial beneficial impacts would accrue to the owners and operators of large container ships that call at the existing terminals in Norfolk and Portsmouth. Potential benefits would grow as the amount of general cargo increases within the port and container ships calling at the port become increasingly larger. Container shipments have grown significantly in recent years, and industry experts project even more substantial increases in the future. VPA studies, previously discussed in Section I, indicate a potential by the year 2010 for a 250 percent increase in containerized cargo and a 200 percent increase in break bulk cargo over 1994 levels. Industry estimates project that by the year 2010, almost 40 percent of containerized cargo will move in vessels with a capacity of 4,000 TEU's or greater. Container ships have already called at the port with the capacity of 6,000 TEU's and loaded drafts of 47.5 feet. In addition to container ships, the 50-foot-deep inbound channel would benefit all vessel traffic on the southside of the Hampton Roads harbor by replacing the existing two-level channel with a one-level channel at the 50-foot depth over existing authorized/recommended widths.

**Environmental Impacts**

Substantial environmental studies were accomplished during the period from 1982 to 1985 by Federal agencies, state and university research laboratories, and private contractors under provisions of PL 99-88, as described previously for the 55-foot-deep outbound lane of the Norfolk Harbor and Channels project (Concern Number 2). All NEPA and related documentation have been fully satisfied but will require updating prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II, the 50-foot inbound element is part of the Norfolk Harbor and Channels project, which is authorized but not yet constructed. The construction of this element of the project would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate funding. In accordance with the WRDA 86, the VPA would be responsible for 60 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA. There are also funding requirements for project implementation from the private pier facility owners and operators.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional channel depths in the Federal channels would be accomplished by the Corps of Engineers. In accordance with the provisions of Section 101(b) of the WRDA 86, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would be the responsibility of the Commonwealth. Maintenance dredging of access channels and berthing areas would be the responsibility of the owners and operators of adjacent facilities and would require authorization from the Norfolk District Regulatory Branch.

### **Cost Sharing**

Since no significant increase is expected in the average annual quantity of maintenance material and, consequently, no incremental average annual maintenance cost, no additional cost sharing is anticipated.

Table V-5. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 5

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Thimble Shoal Channel	12,150	4,860.0	7,290.0
Dredge Norfolk Harbor Channel	<u>7,601</u>	<u>3,040.4</u>	<u>4,560.6</u>
Subtotal	19,751	7,900.4	11,850.6
Engineering and design (2%)	395	158.0	237.0
Supervision and administration (4%)	<u>790</u>	<u>316.0</u>	<u>474.0</u>
Total	20,936	8,374.4	12,561.6

## CONCLUSIONS

This specific concern only relates to the southside of the Hampton Roads harbor. It would complete the 50-foot channel system in the port and appears to have sufficient merit to be investigated in further detail. This concern will be considered for combination with appropriate prioritized concerns in Section VI.

## CONCERN NUMBER 6

### **ELIZABETH RIVER CHANNEL: NEED TO DEEPEN FROM 40 FEET TO THE AUTHORIZED DEPTH OF 45 FEET FROM LAMBERTS POINT TO THE JUNCTION OF THE EASTERN AND SOUTHERN BRANCH CHANNELS**

## DESCRIPTION

This concern expresses a need to deepen the Elizabeth River Channel from its currently maintained depth of 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern Branch and Southern Branch Channels. The concern,

identified by stakeholders and prioritized by Circle "A" members, is a separable element of what is generally referred to as the Elizabeth River and Southern Branch Channels.

## **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the Port Norfolk and Town Point Reaches of the Elizabeth River Channel to 45 feet, as discussed in Section II. The access channels and berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 45-foot main channel depth. Dredged material from the Corps of Engineers project would be placed in the Craney Island Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process.

## **PLAN ACCOMPLISHMENTS**

Provision of the 45-foot-deep channel would benefit the terminals and ship repair yards located along these reaches of the Elizabeth River Channel, such as the Portsmouth Marine Terminal and the general cargo facilities of Sea Land Service, Inc., located in the City of Portsmouth on the north side of Pinners Point.

## **ANALYSES**

Analyses accomplished on this specific concern have been in connection with the entire Elizabeth River Channel and Southern Branch Channel 45-foot element. There have been no separate economic evaluations made of this separable element. Since completion of the 1980 Feasibility Report, cost estimates based on price level increases only have been developed to support budget requests and to keep the local sponsor informed. The most recent estimate, based on October 1998 price levels, was prepared to support this Navigation Management Plan.

### Initial Construction Costs

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 2,430,000 cubic yards of material would be dredged during the initial construction. These cost estimates are presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-6. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 6

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Elizabeth River Channel (Port Norfolk and Town Point Reaches)	9,842
Craney Island tolls	<u>2,790</u>
Subtotal	12,632
Engineering and design (2%)	253
Supervision and administration (4%)	<u>505</u>
Total	13,390

## **Operation and Maintenance Costs**

It is estimated that there would be an average annual increase of 21,000 cubic yards in dredged material removed to support the maintenance of a 45-foot-deep channel over that currently dredged for the existing 40-foot-deep channel in the Port Norfolk and Town Point Reaches of the Elizabeth River Channel. The incremental increase in average annual operation and maintenance costs, based on this additional quantity of dredged material, is estimated to be \$100,000 at October 1998 price levels.

## **Benefits**

No quantification of monetary benefits has been accomplished for this specific element. Benefit estimates were prepared for the entire Elizabeth River Channel and Southern Branch Channel 45-foot element in the 1980 Feasibility Report and updated periodically thereafter; however, the price level indexes used to make the updates may not reflect actual conditions that have occurred in the shipping industry. The latest benefit update was to October 1986 price levels and indicated average annual benefits of over \$15 million for the entire 45-foot project. The estimate did not reflect changes in the quantity and type of commodities being currently transported on the channel and no benefits were estimated to accrue to the reach of the Elizabeth River Channel described in this concern.

## **Environmental Impacts**

During the 1980 Feasibility Report study, a Final EIS was prepared. A Final Supplement 1 to this statement was prepared in 1985 to address additional work and changes to the project up to that time. Extensive environmental investigations have already been performed during PED. Physical and numerical model studies of the entire Norfolk Harbor and Channels project were conducted to predict possible effects on tides, currents, salinity, and sedimentation. Extensive sediment quality testing was also performed on the entire harbor system and supplemental sediment studies were conducted for the Norfolk Harbor and Southern Branch Channels in August 1995 and August and September 1996 (see Appendix E, Tables E-1 and E-2 for references to reports on these studies). However, it is expected that additional work will be required to

support the preparation of necessary NEPA documentation prior to construction of this element.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II, the 45-foot element is part of the Norfolk Harbor and Channels project, which is authorized, but not yet constructed. The construction of this element of the project would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate funding. In accordance with the WRDA 86, the VPA would be responsible for 35 percent of the general navigation features (10 percent of which can be paid over 30 years), including Craney Island toll charges but excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA. There are also funding requirements for project implementation from the private pier facility owners and operators.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional channel depths in the Federal channels would be accomplished by the Corps of Engineers. The Federal Government would be responsible for 100 percent of the operation and maintenance cost of the 45-foot-deep channel. Maintenance dredging of access channels and berthing areas would be the responsibility of the owners and operators of adjacent facilities and would require authorization from the Norfolk District Regulatory Branch.

### **Cost Sharing**

The cost-sharing requirements for the 45-foot element are based on the provisions of the WRDA's 86 and 88 and current guidance and policies. The following table shows the apportionment of Federal and non-Federal construction costs.



Table V-7. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 6

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Elizabeth River Channel (Port Norfolk and Town Point Reaches)	9,842	6,397.3	3,444.7
Craney Island tolls	<u>2,790</u>	<u>1,813.5</u>	<u>976.5</u>
Subtotal	12,632	8,210.8	4,421.2
Engineering and design (2%)	253	164.5	88.5
Supervision and administration (4%)	<u>505</u>	<u>328.2</u>	<u>176.8</u>
Total	13,390	8,703.5	4,686.5

## CONCLUSIONS

This specific concern is a separate element of the Elizabeth River Channel and Southern Branch Channel 45-foot improvements, which provides for deepening the existing 40-foot channel to the authorized depth of 45 feet from Lamberts Point to the Norfolk Southern Railroad bridge on the Southern Branch of the Elizabeth River. This concern could be more logically addressed with the construction of the entire 45-foot reach. Accordingly, this specific concern will be considered for combination with appropriate prioritized concerns in Section VI to develop a long-range, comprehensive planning strategy for the port.

## **CONCERN NUMBER 7 (TIE)**

### **NORFOLK HARBOR CHANNEL: NEED TO DEEPEN THE INBOUND LANE FROM 45 FEET TO THE AUTHORIZED DEPTH OF 55 FEET TO LAMBERTS POINT**

#### **DESCRIPTION**

This concern expresses a need to deepen the elements of the inbound lane of the Norfolk Harbor Channel from their currently maintained depth of 45 feet to the authorized depth of 55 feet to Lamberts Point. The 55-foot inbound channel is a separable element of the Norfolk Harbor and Channels project authorized by the WRDA 86. The concern identified by stakeholders and prioritized by Circle "A" members is related to improvements to inbound navigation on the southside of the Hampton Roads harbor, and it is an extension of Concern Number 5.

#### **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the inbound channel element of the Norfolk Harbor Channel to 55 feet. As discussed in Concern Number 2, it would also require the dredging of the approach channels (the Atlantic Ocean Channel and the Thimble Shoal Channel), anchorages (Anchorage F and Sewells Point), and appropriate access channels and berthing areas. The access channels and berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 55-foot main channel depth. In addition, some wrecks would have to be cleared, a water main would have to be relocated or replaced, a tunnel cover would have to be constructed to protect the Chesapeake Bay Bridge-Tunnel, which runs under the Thimble Shoal Channel, and aids to navigation would have to be moved and/or installed.

Dredged material from the Corps of Engineers project would be placed in the Dam Neck Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process. Suitable material from the Thimble Shoal and Atlantic Ocean Channels would be

considered for nourishing area beaches. During the PED phase, consideration would be given to placing dredged material in the Craney Island Dredged Material Area, which could result in a significant reduction in project cost.

## **PLAN ACCOMPLISHMENTS**

Plan accomplishments would be the same as those described previously for Concern Number 5, except the additional depth would obviously accommodate larger container ships. It would also enable owners and operators of other ships to utilize the additional cargo-carrying capacity of their vessels, thereby, achieving savings in transportation costs. It would allow modern deep-draft vessels to operate in a more efficient, safe, and economical manner and enable the port to maintain a competitive position in the world containerized-cargo market. It is estimated that the deepening of the Thimble Shoal and Atlantic Ocean Channels would provide over 6 million cubic yards of suitable quality dredged material for nourishing area beaches under the authority of Section 145 of the WRDA 76, as modified by Section 933 of the WRDA 86.

## **ANALYSES**

As in the case of Concern Number 5, there have been no separate economic evaluations made of the 55-foot inbound channel element. Discussions contained relative to Concern Number 5 are equally appropriate for this concern. The most recent estimate, based on October 1998 price levels, was prepared to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 24,601,000 cubic yards of material would be dredged during the initial construction as shown in Table II-3. It is not very likely that this concern would be implemented prior to the implementation of Concern Number 2. Detailed cost estimates have been made, based on this premise and are included in Section VI. Accordingly, it is not considered warranted to expend time and resources to prepare a separate detailed cost estimate for

this concern, assuming Concern Number 2 is not in place. However, using readily available information, it is possible to develop a reasonable, preliminary estimate for the cost of constructing Concern Number 7 as a "stand alone" increment, which is presented for informational purposes and to provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. In addition, the water main and tunnel cover items also include engineering and design and supervision and administration costs since these are totally a non-Federal responsibility. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-8. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 7 (TIE)

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,276
Dredge Thimble Shoal Channel	26,068
Dredge Norfolk Harbor Channel	32,200
Dredge Hampton Roads Anchorage F (1)	9,510
Dredge Sewells Point Anchorage	18,141
Remove wrecks	<u>868</u>
Subtotal	103,063
Engineering and design (2%)	2,061
Supervision and administration (4%)	<u>4,123</u>
Total	109,247
Relocate/replace 36-inch water main	5,006
Construct Thimble Shoal tunnel cover	<u>4,184</u>
Total	9,190
Grand total	118,437

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

### **Operation and Maintenance Costs**

The incremental increase in average annual operation and maintenance costs is estimated to be \$820,000 at October 1998 price levels.

## **Benefits**

Discussion of benefits for this concern is identical to that presented for Concern Number 5. As previously stated, container ships with a potential loaded draft of 47.5 feet have already called at the port, and even larger ships are expected. Industry experts expect an increasing amount of containerized cargo to move in these mega ships in the future. A 55-foot-deep inbound channel would permit appropriate under-keel clearance for these larger ships and would provide for efficient and safe navigation.

## **Environmental Impacts**

Substantial environmental studies were accomplished during the period from 1982 to 1985 by Federal agencies, state and university research laboratories, and private contractors under provisions of PL 99-88, as described previously for the 55-foot-deep outbound lane of the Norfolk Harbor and Channels project (Concern Number 2). All NEPA and related documentation have been fully satisfied but will require updating prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II and Concern Number 5, the 55-foot inbound element is part of the Norfolk Harbor and Channels project that is authorized, but not yet constructed. The construction of this element of the project would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate funding. In accordance with the WRDA 86, the VPA would be responsible for 60 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA. There are also funding requirements for project implementation from the City of Norfolk, the

Chesapeake Bay Tunnel District Commission, and the private pier facility owners and operators.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional channel depths in the Federal channels, including the Atlantic Ocean Channel, would be accomplished by the Corps of Engineers. In accordance with the provisions of Section 101(b) of the WRDA 86, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would be the responsibility of the Commonwealth. Maintenance dredging of access channels and berthing areas would be the responsibility of the owners and operators of adjacent facilities and would require authorization from the Norfolk District Regulatory Branch.

### **Cost Sharing**

The cost-sharing requirements for the 55-foot inbound element are based on the provisions of the WRDA's 86, 88, and 96 and current guidance and policies. The following table shows the apportionment of Federal and non-Federal construction costs. The incremental increase in average annual operation and maintenance costs associated with this element is estimated at \$820,000, of which \$410,000 would be a Federal responsibility and \$410,000 a non-Federal responsibility.

Table V-9. INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER  
7 (TIE)

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,276	6,510.4	9,765.6
Dredge Thimble Shoal Channel	26,068	10,427.2	15,640.8
Dredge Norfolk Harbor Channel	32,200	12,880.0	19,320.0
Dredge Hampton Roads Anchorage F (1)	9,510	3,804.0	5,706.0
Dredge Sewells Point Anchorage	18,141	7,256.4	10,884.6
Remove wrecks	<u>868</u>	<u>347.2</u>	<u>520.8</u>
Subtotal	103,063	41,225.2	61,837.8
Engineering and design (2%)	2,061	824.4	1,236.6
Supervision and administration (4%)	<u>4,123</u>	<u>1,649.2</u>	<u>2,473.8</u>
Total	109,247	43,698.8	65,548.2
Relocate/replace 36-inch water main	5,006	0.0	5,006.0
Construct Thimble Shoal tunnel cover	<u>4,184</u>	<u>0.0</u>	<u>4,184.0</u>
Total	9,190	0.0	9,190.0
Grand total	118,437	43,698.8	74,738.2

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).



## **CONCLUSIONS**

This specific concern only relates to the southside of the Hampton Roads harbor. It appears to have merit and should be investigated in further detail. This concern will be considered for combination with appropriate prioritized concerns in Section VI.

### **CONCERN NUMBER 7 (TIE)**

#### **FUNDING**

#### **DESCRIPTION**

Funding is a universal concern involved in all port operations and development, since there is rarely sufficient money to accomplish all that is desired. The expressed need is to establish appropriate priorities so that available funds are used most efficiently and effectively.

#### **PROPOSED ACTION**

The objective is to help decision makers to arrive at more informed judgments regarding the port's future navigation problems, needs, concerns, and opportunities. Better and more comprehensive information will assist in reducing funding constraints, which limit the extent to which prioritized concerns may be successfully addressed. As discussed in Section I, a primary purpose of this Plan is to establish priorities based on the input of stakeholders, which will be beneficial in preparing and justifying budget requests. Other planning actions discussed in Section I, such as the VPA's 2010 Plan, will also facilitate future funding decisions.

#### **PLAN ACCOMPLISHMENTS**

The availability of more comprehensive information regarding the navigation concerns identified by port users and prioritized by Circle "A" stakeholders will permit decision makers to better determine the best use of the funds that are available. Since there will never be enough money to do everything that stakeholders desire, the Plan will help Federal, state, local, and private investors to arrive at informed decisions based on a prioritized list established by port users and interests.

## **CONCLUSIONS**

A key objective of the Navigation Management Plan is the identification and prioritization of the navigation problems, needs, concerns, and opportunities associated with the operation, maintenance, and development of the port. Obviously, appropriate funding from Federal, state, local, and private interests is essential to the development of a long-range, comprehensive planning strategy for the port. Since adequate funding is a necessity for the implementation of actions required to address all of the identified concerns, it will be discussed further in Section VI, particularly as it relates to cost sharing.

### **CONCERN NUMBER 9**

#### **CHANNEL TO NEWPORT NEWS: NEED TO DEEPEN THE OUTBOUND LANE FROM 50 FEET TO THE AUTHORIZED DEPTH OF 55 FEET**

#### **DESCRIPTION**

This concern expresses a need to deepen the elements of the outbound lane of the Channel to Newport News from their currently maintained depth of 50 feet to the authorized depth of 55 feet. The 55-foot outbound channel is a separable element of the Norfolk Harbor and Channels project authorized by the WRDA 86. This concern, identified by stakeholders and prioritized by Circle "A" members, is related to improvements to outbound navigation on the northside of the Hampton Roads harbor.

#### **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the Channel to Newport News to 55 feet. It would be deepened, however, over its fully authorized width of 800 feet, as was done when it was deepened from 45 feet to 50 feet; therefore, there would be no need for the inbound lane. As discussed in Section II, it would also require the dredging of the outbound lanes of the approach channels (the Atlantic Ocean Channel, the Thimble Shoal Channel, and the Entrance Reach of the Norfolk Harbor Channel), anchorages (Anchorage F and Sewells Point), and appropriate access channels and berthing areas. The access channels and

berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 55-foot main channel depth. In addition, some wrecks would have to be cleared, a tunnel cover would have to be constructed to protect the Chesapeake Bay Bridge-Tunnel, which runs under the Thimble Shoal Channel, and aids to navigation would have to be moved and/or installed.

Dredged material from the Corps of Engineers project would be placed in the Dam Neck Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process. Suitable material from the Thimble Shoal and Atlantic Ocean Channels would be considered for nourishing area beaches. During the PED phase, consideration would be given to placing dredged material in the Craney Island Dredged Material Area, which could result in a significant reduction in project cost.

## **PLAN ACCOMPLISHMENTS**

Provision of the 55-foot-deep Channel to Newport News and its outbound elements would primarily serve the large bulk coal carriers departing the northside of the port with loaded drafts of 50 feet and greater. It would enable owners and operators of these ships to utilize the additional cargo-carrying capacity of their vessels, thereby, achieving savings in transportation costs. It would allow modern deep-draft vessels to operate in a more efficient, safe, and economical manner and enable the port to maintain a competitive position in the world coal market. It is also estimated that the deepening of the Thimble Shoal and Atlantic Ocean Channels would provide over 6 million cubic yards of suitable quality dredged material for nourishing area beaches under authority of Section 145 of the WRDA 76, as modified by Section 933 of the WRDA 86.

## **ANALYSES**

The most recent detailed analyses of costs, benefits, environmental, and other impacts of the 55-foot-deep Channel to Newport News and its outbound elements were accomplished in the 1989 Supplemental Engineering Report, as discussed in Concern Number 2. Analyses accomplished subsequent to this report have been limited primarily

to updating costs in support of periodic budget submittals and keeping the local sponsor advised of project status. The most recent estimate, based on October 1998 price levels, was accomplished to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 26.2 million cubic yards of material would be dredged during the initial construction as shown in Table II-3. The costs for this specific concern are based on estimates prepared for the entire 55-foot outbound channel element. It is likely that some of these values would be modified if this concern was accomplished separately from the total 55-foot outbound channel project; however, the estimates are presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. In addition, the tunnel cover item also includes engineering and design and supervision and administration costs since these are totally a non-Federal responsibility. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-10. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 9

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,255
Dredge Thimble Shoal Channel	28,121
Dredge Channel to Newport News	26,144
Dredge Hampton Roads Anchorage F (1)	9,510
Dredge Sewells Point Anchorage	18,141
Remove wrecks	<u>868</u>
Subtotal	99,039
Engineering and design (2%)	1,981
Supervision and administration (4%)	<u>3,962</u>
Total	104,982
Construct Thimble Shoal tunnel cover	<u>4,184</u>
Grand total	109,166

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

### **Operation and Maintenance Costs**

The incremental increase in average annual operation and maintenance costs, based on the maintenance cycles and cubic yardage as shown in Table II-3, is estimated to be \$700,000 at October 1998 price levels.

## **Benefits**

The benefits attributable to the 55-foot outbound channel are based primarily on transportation savings accruing to the export of coal via deeper channels as described under Plan Accomplishments and in Concern Number 2. As indicated in Concern Number 2, a total savings of \$22.2 million would accrue to the total 55-foot-deep outbound channel, both the northside and southside of the harbor. Although no separation of benefits was accomplished between the northside and southside of the harbor, it is estimated that about 40 percent of the savings would accrue to the northside, based on the most recent data available regarding coal exports.

## **Environmental Impacts**

Substantial environmental studies were accomplished during the period from 1982 to 1985 by Federal agencies, state and university research laboratories, and private contractors under provisions of Public Law 99-88, as described previously for the 55-foot-deep outbound lane for the Norfolk Harbor and Channels project. While all NEPA and related documentation have been fully satisfied, they will require updating prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II, the 55-foot outbound element is part of the Norfolk Harbor and Channels project that is authorized, but not yet constructed. The construction of this element of the project would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate funding. In accordance with the WRDA 86, the VPA would be responsible for 60 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA. There are also funding requirements

for project implementation from the Chesapeake Bay Tunnel District Commission and the private pier facility owners and operators.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional channel depths in the Federal channels, including the Atlantic Ocean Channel, would be accomplished by the Corps of Engineers. In accordance with the provisions of Section 101(b) of the WRDA 86, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would be the responsibility of the Commonwealth. Maintenance dredging of access channels and berthing areas would be the responsibility of the owners and operators of adjacent facilities and would require authorization from the Norfolk District Regulatory Branch.

### **Cost Sharing**

The cost-sharing requirements for the 55-foot outbound element are based on the provisions of the WRDA's 86, 88, and 96 and current guidance and policies. The following table shows the apportionment of Federal and non-Federal construction costs. The incremental increase in average annual operation and maintenance costs associated with the project is estimated at \$700,000, of which \$350,000 would be a Federal responsibility and \$350,000 a non-Federal responsibility.

Table V-11. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 9

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,255	6,502.0	9,753.0
Dredge Thimble Shoal Channel	28,121	11,248.4	16,872.6
Dredge Channel to Newport News	26,144	10,457.6	15,686.4
Dredge Hampton Roads Anchorage F (1)	9,510	3,804.0	5,706.0
Dredge Sewells Point Anchorage	18,141	7,256.4	10,884.6
Remove wrecks	<u>868</u>	<u>347.2</u>	<u>520.8</u>
Subtotal	99,039	39,615.6	59,423.4
Engineering and design (2%)	1,981	792.4	1,188.6
Supervision and administration (4%)	<u>3,962</u>	<u>1,584.8</u>	<u>2,377.2</u>
Total	104,982	41,992.8	62,989.2
Construct Thimble Shoal tunnel cover	<u>4,184</u>	<u>0.0</u>	<u>4,184.0</u>
Grand total	109,166	41,992.8	67,173.2

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## CONCLUSIONS

This concern relates only to the northside of the Hampton Roads harbor and does not include all of the elements of the 55-foot outbound channel project; specifically, most of the Norfolk Harbor Channel. It could be more logically addressed with the



construction of the entire 55-foot outbound element of the Norfolk Harbor and Channels project. Accordingly, this specific concern will be considered for combination with appropriate prioritized concerns in Section VI to develop a long-range, comprehensive planning strategy for the Port of Hampton Roads.

#### **CONCERN NUMBER 10 (TIE)**

#### **SOUTHERN BRANCH CHANNEL: NEED TO DEEPEN FROM 40 FEET TO THE AUTHORIZED DEPTH OF 45 FEET TO THE NORFOLK SOUTHERN RAILROAD BRIDGE**

##### **DESCRIPTION**

This concern expresses a need to deepen a portion of the Southern Branch Channel from its currently maintained depth of 40 feet to the authorized depth of 45 feet from the junction with the main channel of the Elizabeth River upstream to the Norfolk Southern Railroad bridge. The concern, identified by stakeholders and prioritized by Circle "A" members, is a separable element of what is generally referred to as the Elizabeth River and Southern Branch Channels.

##### **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the Lower and Middle Reaches of the Southern Branch Channel to 45 feet, as discussed in Section II. It would also include deepening the approach and turning basin from 40 feet to 45 feet opposite the Norfolk Naval Shipyard between Miles 13 and 14. The access channels and berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 45-foot main channel depth. Dredged material from the Corps of Engineers project would be placed in the Craney Island Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process. In addition, some cables would have to be removed.

## **PLAN ACCOMPLISHMENTS**

Provision of the 45-foot-deep channel would benefit the various industries, ship repair yards, and storage facilities located along these reaches of the Southern Branch Channel, such as the Navy operations at the Norfolk Naval Shipyard. It would permit safe and efficient navigation for large commercial and Navy ships calling at terminals in this area of the river.

## **ANALYSES**

As in the case of Concern Number 6, there have been no separate economic evaluations made of this portion of the Elizabeth River Channel and Southern Branch Channel 45-foot element. Discussions relative to Concern Number 6 are equally appropriate for this concern. The most recent estimate, based on October 1998 price levels, was prepared to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 4,770,000 cubic yards of material would be dredged during the initial construction. These cost estimates are presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. In addition, the cable item also includes engineering and design and supervision and administration costs since these are totally a non-Federal responsibility. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next

major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-12. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 10 (TIE)

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Southern Branch Channel (Lower and Middle Reaches)	7,209
Craney Island tolls	<u>2,050</u>
Subtotal	9,259
Engineering and design (2%)	185
Supervision and administration (4%)	<u>370</u>
Total	9,814
Remove cables	<u>305</u>
Grand total	10,119

### **Operation and Maintenance Costs**

It is estimated that there would be an average annual increase of 12,000 cubic yards in dredged material removed to support the maintenance of a 45-foot-deep channel over that currently dredged for the existing 40-foot-deep channel in the Middle and Lower Reaches of the Southern Branch Channel. The incremental increase in average annual operation and maintenance costs, based on this additional quantity of dredged material, is estimated to be \$50,000 at October 1998 price levels.

## **Benefits**

Discussion of monetary benefits included for Concern Number 6 is also appropriate for this concern. As previously stated, the latest benefit quantification was based on October 1986 price levels and indicated average annual benefits of over \$15 million for the entire Elizabeth River Channel and Southern Branch Channel 45-foot element.

## **Environmental Impacts**

The discussion of environmental impacts relative to Concern Number 6 are equally applicable to this concern. Although all NEPA and related requirements have been fully satisfied, they will require updating prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II and Concern Number 6, the 45-foot element is part of the Norfolk Harbor and Channels project. Discussions included for Concern Number 6 are also applicable to this concern. There are also funding requirements for project implementation from the owner of the cables to be removed and private pier facility owners and operators.

**Operation and Maintenance.** Discussions included for Concern Number 6 are also applicable to Concern Number 10 (tie).

### **Cost Sharing**

Discussions included for Concern Number 6 are also applicable to this concern. The following table shows the apportionment of Federal and non-Federal construction costs.

Table V-13. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 10 (TIE)

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Southern Branch Channel (Lower and Middle Reaches)	7,209	4,685.9	2,523.1
Craney Island tolls	<u>2,050</u>	<u>1,332.5</u>	<u>717.5</u>
Subtotal	9,259	6,018.4	3,240.6
Engineering and design (2%)	185	120.2	64.8
Supervision and administration (4%)	<u>370</u>	<u>240.5</u>	<u>129.5</u>
Total	9,814	6,379.1	3,434.9
Remove cables	<u>305</u>	<u>0.0</u>	<u>305.0</u>
Grand total	10,119	6,379.1	3,739.9

## CONCLUSIONS

This specific concern is a separate portion of the Elizabeth River Channel and Southern Branch Channel 45-foot improvements, which provide for deepening the existing 40-foot channel to the authorized depth of 45 feet from Lamberts Point to the Norfolk Southern Railroad bridge on the Southern Branch of the Elizabeth River. This concern could not be addressed without first addressing Concern Number 6.

Accordingly, this specific concern will be considered for combination with appropriate prioritized concerns in Section VI to develop a long-range, comprehensive planning strategy for the port.

### **CONCERN NUMBER 10 (TIE)**

**NEED TO DEEPEN THE ENTIRE EASTERNMOST ANCHORAGE AREA OPPOSITE SEWELLS POINT (K-1) AND A SMALL SECTION OF CHANNEL TO 50 FEET TO PROVIDE EASIER TRANSIT BETWEEN THE NORFOLK HARBOR CHANNEL AND THE CHANNEL TO NEWPORT NEWS; IN ADDITION, THE K-1 ANCHORAGE WOULD NEED TO BE RELOCATED**

#### **DESCRIPTION**

This concern expresses a need to deepen the K-1 Anchorage to 50 feet, including a small section of the Norfolk Harbor Channel adjacent to the anchorage area. Also included is a small area, adjacent to the K-1 Anchorage, known as the Naval Maneuvering Area.

#### **PROPOSED ACTION**

Aside from deepening the areas described from 45 feet to 50 feet, the existing K-1 Anchorage would have to be relocated to an alternate site. This relocation would necessitate the deauthorization of the existing anchorage site and the consideration of a newly authorized anchorage area to be evaluated in a comprehensive anchorage analysis for the entire port. This analysis could be conducted as part of the PED phase of a major channel deepening or as a separate investigation. Dredged material would be placed in the Dam Neck Dredged Material Area.

#### **PLAN ACCOMPLISHMENTS**

Deepening these areas from 45 feet to 50 feet would provide a safer and more efficient turn to facilitate the maneuvering of large vessels from one channel to the other. It would be most beneficial for larger bulk coal carriers taking on partial loads at terminals on both the northside and southside of the port.

#### **ANALYSES**

There have been no economic evaluations made for this specific concern, although initial costs have been estimated to support this Navigation Management Plan.

## **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 4.5 cubic yards of material would be dredged during the initial construction. Unlike the deepening elements discussed earlier, no studies or preliminary design have been conducted on this improvement, previous to its being included as part of the Navigation Management Plan; therefore, for the purposes of this analysis only, the cost estimate for the relocation of the K-1 Anchorage is based on the deepening of the K-2 Anchorage area by 5 feet from 40 feet to 45 feet, thus retaining the 45-foot-deep anchorage with a 1,200-foot swinging radius. The estimates presented in the following table are for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. The costs for aids to navigation (the responsibility of the Coast Guard) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-14. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 10 (TIE)

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge K-1 Anchorage (1)	15,876
Dredge K-2 Anchorage (1)	9,639
Engineering and design (2%)	510
Supervision and administration (4%)	<u>1,021</u>
Total	27,046

(1) Please see anchorage designations for (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

### **Operation and Maintenance Costs**

It is estimated that there would be an average annual increase of 50,000 cubic yards in dredged material removed to support the maintenance in this area over the existing depths. The incremental increase in average annual operation and maintenance costs, based on this additional quantity of dredged material, is estimated to be \$200,000 at October 1998 price levels.

### **Benefits**

Although no monetary values have been quantified for addressing this concern, it would provide substantial beneficial impacts resulting from the provision of an adequate area to permit large vessels to make the turn from one channel to the other with reduced tug assistance. It would enhance navigation in the port by providing additional safety, effectiveness, and efficiency in operations.

### **Environmental Impacts**

All NEPA and related requirements will be fully satisfied prior to construction.



## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** The deepening of the K-1 Anchorage, a small part of the Norfolk Harbor Channel, and the Naval Maneuvering Area to 50 feet and the relocation of the existing anchorage area would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate authorization and funding. In accordance with the WRDA 86, the VPA would be responsible for 60 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation, for the dredging in excess of 45 feet. For the area where the dredging is 45 feet or less, the VPA would be responsible for 35 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional depths would be accomplished by the Corps of Engineers. In accordance with the provisions of Section 101(b) of the WRDA 86, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would be the responsibility of the Commonwealth; however, the Federal Government would be responsible for 100 percent of the operation and maintenance cost of the 45-foot deep K-2 Anchorage.

### **Cost Sharing**

The cost-sharing requirements for this work are based on the provisions of the WRDA's 86, 88, and 96 and current guidance and policies. The following table shows the apportionment of Federal and non-Federal construction costs. The incremental increase in average annual operation and maintenance costs associated with this project is estimated at \$200,000, of which \$150,000 would be a Federal responsibility and \$50,000 a non-Federal responsibility.

Table V-15. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 10 (TIE)

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge K-1 Anchorage (1)	15,876	6,350.4	9,525.6
Dredge K-2 Anchorage (1)	9,639	6,265.3	3,373.7
Engineering and design (2%)	510	252.3	257.7
Supervision and administration (4%)	<u>1,021</u>	<u>504.6</u>	<u>516.4</u>
Total	27,046	13,372.6	13,673.4

(1) Please see anchorage designations for (K-1), (K-2), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## CONCLUSIONS

The implementation of this concern would require the deauthorization of the existing Federally authorized K-1 Anchorage area and the consideration of an alternative replacement location. The concern, however, has substantial merit and will be considered in Section VI.

### CONCERN NUMBER 12

#### **SOUTHERN BRANCH CHANNEL: NEED TO DEEPEN FROM 35 FEET TO THE AUTHORIZED DEPTH OF 40 FEET TO GILMERTON BRIDGE**

## DESCRIPTION

This concern expresses a need to deepen a portion of the Southern Branch Channel from its currently maintained depth of 35 feet to the authorized depth of 40 feet from the Norfolk Southern Railroad bridge to the Gilmerton Bridge (U.S. Routes 460 and 13 highway bridge). The concern, identified by stakeholders and prioritized by Circle

"A" members, is a separable element of what is generally referred to as the Elizabeth River Channel and Southern Branch Channels.

## **PROPOSED ACTION**

The proposed action necessary to address the above-described concern would require the deepening of the Upper Reach of the Southern Branch Channel to 40 feet, as discussed in Section II. It would also include the construction of a 800 foot turning basin to a depth of 40 feet at the channel's terminus. The access channels and berthing areas adjacent to the main channel would be deepened by the respective users to be commensurate with the 40-foot main channel depth. Dredged material from the Corps of Engineers project would be placed in the Craney Island Dredged Material Area. The placement area for dredged material from the access channels and berthing areas would be determined during the permit process. In addition, a water main would have to be relocated or replaced.

## **PLAN ACCOMPLISHMENTS**

Provision of the 40-foot-deep channel would benefit deep-draft vessels in the coastwise and foreign trade that transport petroleum, grain, general cargo, and miscellaneous dry and liquid bulk commodities to and from terminals on the Southern Branch. It would also provide an opportunity for further industrial development along this reach of the river.

## **ANALYSES**

The most recent detailed analyses of costs, benefits, and environmental and other impacts of this concern were made in the 1980 Feasibility Report. Discussions relative to Concern Number 6 are equally appropriate for this concern. The most recent estimate, based on October 1998 price levels, was prepared to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 2,350,000 cubic yards of material would be dredged during the initial construction as shown in Table II-3. These cost estimates are presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. In addition, the water main and turning basin items also include engineering and design and supervision and administration costs since these are totally a non-Federal responsibility. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-16. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 12

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Southern Branch Channel (Upper Reach)	12,220
Craney Island tolls	<u>2,700</u>
Subtotal	14,920
Engineering and design (2%)	298
Supervision and administration (4%)	<u>597</u>
Total	15,815
Relocate/replace 42-inch water main	3,615
Acquire land for turning basin	<u>1,000</u>
Total	4,615
Grand total	20,430

### **Operation and Maintenance Costs**

The incremental increase in average annual operation and maintenance costs, based on the maintenance cycles and cubic yardage as shown in Table II-3, is estimated to be \$200,000 at October 1998 price levels.

### **Benefits**

Discussion of monetary benefits included for Concern Number 6 is also appropriate for this concern. The values from the 1980 Feasibility Report were updated by indexing to October 1988 price levels for the Plan of Action for Engineering and Design Report dated May 1988, which indicated an average annual benefit of

\$31 million. The update, however, did not reflect the potential effects of changes in commodities or quantities of commodities, which are currently transported on the channel. Due to possible changes in commodities, vessel sizes, and operating practices, it will be necessary to reevaluate the transportation savings, which would accrue to a 40-foot-deep channel prior to construction to affirm economic justification.

### **Environmental Impacts**

The discussion of environmental impacts relative to Concern Number 6 are equally applicable to this concern. Although all NEPA and related requirements have been fully satisfied, they will require updating prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II, the 40-foot element is part of the Norfolk Harbor and Channels project. Discussions included for Concern Number 6 are also applicable to this concern. There are also funding requirements for project implementation from the City of Norfolk and private pier facility owners and operators. Non-Federal activities in the waters of the United States or wetlands to implement this concern would require authorizations from the Norfolk District Regulatory Branch.

**Operation and Maintenance.** Discussions included for Concerns Number 6 are also applicable to Concern Number 12.

### **Cost Sharing**

Discussions included for Concerns Number 6 and 10 (tie) (the Southern Branch concern) are also applicable to this concern. The following table shows the apportionment of Federal and non-Federal construction costs.

Table V-17. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 12

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Southern Branch Channel (Upper Reach)	12,220	7,943.0	4,277.0
Craney Island tolls	<u>2,700</u>	<u>1,755.0</u>	<u>945.0</u>
Subtotal	14,920	9,698.0	5,222.0
Engineering and design (2%)	298	193.7	104.3
Supervision and administration (4%)	<u>597</u>	<u>388.1</u>	<u>208.9</u>
Total	15,815	10,279.8	5,535.2
Relocate/replace 42-inch water Main	3,615	0.0	3,615.0
Acquire land for turning basin	<u>1,000</u>	<u>0.0</u>	<u>1,000.0</u>
Total	4,615	0.0	4,615.0
Grand total	20,430	10,279.8	10,150.2

## CONCLUSIONS

This concern appears to have merit and should be investigated in further detail. It will be considered for combination with appropriate prioritized concerns in Section VI.

## **CONCERN NUMBER 13**

### **WATER QUALITY**

#### **DESCRIPTION**

The quality of water in the Hampton Roads harbor area has been identified as a concern by stakeholders. The area surrounding the harbor includes a variety of uses including residential, agricultural, commercial, industrial, and military. Thousands of vessels ranging from cargo ships and navy craft to small commercial fishing boats and pleasure boats make annual use of the harbor. Many years of intensive industrial and military use have added to the deteriorated water quality. As discussed in Section IV, stakeholders identified several specific actions, which could potentially assist in the improvement of water quality in the port. These concerns include actions related to disposal of on-board waste, especially with respect to recreational boats and marinas; the elimination of direct pumping of bilge water into the harbor; better design of container and breakbulk cargo facilities to reduce water quality problems; elimination of "prop" dredging; and proper handling of contaminated dredged material.

#### **PROPOSED ACTION**

Water quality concerns within the port are currently being addressed by existing Federal, state, and local programs. Section I discusses a number of the regulatory, environmental, and other related requirements that are now in place within the harbor. These programs for correcting deteriorating water quality include managing surface runoff; monitoring water quality, so that trends can be established; enforcing water quality regulations; and endorsing of existing Federal and state programs to preserve, maintain, and improve water quality on a regional scale. Existing regulations need to be clearly defined and widely disseminated with timely follow-up and enforcement. The specific actions listed previously would require the cooperation and strict compliance with existing regulations by those individuals, companies, and agencies involved in the specific activities the concern is directed towards. Section III discusses two studies by the Army Corps of Engineers, the Elizabeth River Environmental Restoration Study and



the proposed Lynnhaven River Restoration Study, which will assist in addressing water quality problems in the area.

## **PLAN ACCOMPLISHMENTS**

Improving the water quality within the Hampton Roads harbor would be an important aspect of restoring the environmental conditions of the port. The harbor and its surrounding waters are an important sub-estuary of the Chesapeake Bay, and their improvement would assist in reversing the decline in the vitality of living resources in the Chesapeake Bay through water quality protection.

## **DIVISION OF PLAN RESPONSIBILITY**

The Virginia DEQ is responsible for developing and implementing policies, programs, and procedures to assure the proper use and management of the Commonwealth's water resources. The Water Division of the Virginia DEQ has permitting programs associated with toxic reductions to Virginia water including the Water Quality Standards (VR 680-21-00), the Virginia Pollution Discharge Elimination System (VPDES), the Toxics Management Regulation (VR 680-14-03), the Virginia Pollution Abatement Permits, and the VWPP. Nonpoint source programs include the Stormwater Management Regulations, the Underground Storage Tank Regulations, the Pesticide Management Program, and the Solid and Hazardous Waste Management Programs. The Air Quality Program, which is administered by the Air Division of the Virginia DEQ, monitors and regulates toxics released to the air that are also deposited in the watershed. These and other Virginia programs are described in the following table. Please also reference Appendixes D and H.

Table V-18. WATER QUALITY PROTECTION PROGRAMS IN VIRGINIA

Management program	Oversight agency	Program intent
Water Quality Standards (VR 680-21-00)	DEQ - Water Division	Provides both qualitative descriptions and numeric limits for specific physical, chemical, biological, and radiological characteristics of both surface waters and groundwater. Regulates mixing zones associated with point source discharges. Includes protection of wetlands along with Virginia's waters.
Virginia Pollutant Discharge Elimination System (VPDES) (VR 680-14-01)	DEQ - Water Division	Controls industrial and municipal waste discharges to surface waters. Include numeric effluent limitations, as well as self-monitoring and reporting requirements. Best management practice measures required as part of VPDES program.
Toxics Management Regulation (VR 680-14-03)	DEQ - Water Division	Provides guidelines for the administration and implementation of the Toxics Management Program. Controls the input of toxic pollutants to surface waters from point source discharges.
Virginia Pollution Abatement Permits (VR 680-14-01)	DEQ - Water Division	Applies to waste management facilities and operations that do not directly discharge to surface waters. Issued for land application of sewage sludge, animal waste, and industrial waste.
VWPP	DEQ - Water Division	Clean Water Act Section 401 Certification. Ensures that projects with Federal approval will have no adverse effect on water quality or existing beneficial uses of Virginia's waters.
Pretreatment Program	Hampton Roads Sanitation District (HRSD)	Regulates the "non-domestic" users that discharge toxic or unusually strong conventional waste to publicly owned treatment works. HRSD is responsible for controlling the industrial users under the program.

Table V-18. WATER QUALITY PROTECTION PROGRAMS IN VIRGINIA  
(Cont'd)

Management program	Oversight agency	Program intent
Erosion and Sediment Control Regulations (VR 625-02-00)	Department of Conservation and Recreation	Establishes soil conservation requirements for land-disturbing activities associated with new construction.
Pesticide Management Program (VR 115-04-03)	Virginia Pesticide Control Board	Regulates pesticide use and the protection of human health and environment from unreasonable effects.
Hazardous Waste Management Program (VR 672-10-1)	DEQ - Waste Division	Regulates disposal of hazardous waste and encourages development of waste management programs. Provides for control of all hazardous wastes that are generated in or transported to Virginia. Limits uncontrolled release of hazardous substances to the environment.
Solid Waste Management Program (VR 672-20-10)	DEQ - Waste Division	Regulates management of open dumps and unpermitted facilities, solid waste disposal facility standards, permitting of solid waste management facilities, and special wastes.
Chesapeake Bay Preservation Act	Chesapeake Bay Local Assistance Department and Chesapeake Bay Local Assistance Board	Develops regulations that reverse the decline in the vitality of living resources in the Chesapeake Bay through water quality protection. Local government administered land use controls and stormwater management.

## **CONCLUSIONS**

The improvement of water quality and other environmental preservation actions is an important aspect of port operations, use, and maintenance. It is imperative that all water quality and other environmental requirements are complied with by private and governmental interests in the implementation of actions considered in this Navigation Management Plan. These requirements have been discussed as they relate to each concern and will be carried forward to the next section for incorporation into the long-range, comprehensive planning strategy for the port.

### **CONCERN NUMBER 14**

#### **CHANNEL TO NEWPORT NEWS: NEED TO DEEPEN THE INBOUND LANE FROM 50 FEET TO THE AUTHORIZED DEPTH OF 55 FEET**

#### **DESCRIPTION**

This concern expresses a need to deepen the elements of the inbound lane of the Channel to Newport News from their currently maintained depth of 50 feet to the authorized depth of 55 feet. The 55-foot inbound channel is a separable element of the Norfolk Harbor and Channels project authorized by the WRDA 86. This concern, identified by stakeholders and prioritized by Circle "A" members, is related to improvements to inbound navigation on the northside of the Hampton Roads harbor.

#### **PROPOSED ACTION**

The proposed action necessary to address this concern is similar to that required for Concern Number 9, deepening the outbound lane of the Channel to Newport News to 55 feet. The inbound lane would be deepened over its fully authorized width of 800 feet; therefore, there would be no need to consider the outbound lane separately. Of course, the inbound lanes of the approach channels would be dredged, rather than the outbound lanes, as in Concern Number 9.

## **PLAN ACCOMPLISHMENTS**

Plan accomplishments would be the same as those described previously for the inbound lanes of the Norfolk Harbor Channel, Concerns Number 5 and 7 (tie) (the Norfolk Harbor Channel concern), except they would accrue to the northside of the port.

## **ANALYSES**

As in the case of Concerns Number 5 and 7 (tie) (the Norfolk Harbor Channel concern), there have been no separate economic evaluations made of the 55-foot inbound channel element. Discussions contained relative to Concern Number 5 are equally appropriate for this concern. The most recent estimate, based on October 1998 price levels, was prepared to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 26.2 million cubic yards of material would be dredged during the initial construction as shown in Table II-3. The costs for this specific concern are based on estimates prepared for the entire 55-foot outbound channel element. Some of these values would be modified if this concern were accomplished separately from the total 55-foot outbound channel project. It is not very likely that this concern would be implemented prior to the implementation of Concern Number 9, as described in Section VI. Accordingly, it is not considered warranted to expend time and resources to prepare a separate detailed cost estimate for this concern, assuming Concern Number 9 is not in place. However, using readily available information, it is possible to develop a reasonable, preliminary estimate for the cost of constructing Concern Number 14 as a "stand alone" increment that is presented for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. In addition, the tunnel cover item also includes engineering and design and supervision and administration costs since these are totally a non-Federal responsibility. The costs for aids to navigation (the responsibility of the Coast Guard) and access channel and berthing area dredging (the responsibility of each respective user)

are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-19. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 14

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,276
Dredge Thimble Shoal Channel	26,068
Dredge Channel to Newport News	26,144
Dredge Hampton Roads Anchorage F (1)	9,510
Dredge Sewells Point Anchorage	18,141
Remove wrecks	<u>868</u>
Subtotal	97,007
Engineering and design (2%)	1,940
Supervision and administration (4%)	<u>3,880</u>
Total	102,827
Construct Thimble Shoal tunnel cover	<u>4,184</u>
Grand total	107,011

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

### **Operation and Maintenance Costs**

As indicated in Concern Number 9, the incremental increase in average annual operation and maintenance costs, is estimated to be \$700,000 at October 1998 price levels.

## **Benefits**

The discussion of benefits for this concern is similar to that previously presented for Concerns Number 5 and 7 (tie) (the Norfolk Harbor Channel concern) except that these beneficial impacts would accrue to the northside of the port. As stated in Concern Number 7 (tie), container ships with a potential loaded draft of 47.5 feet have already called at the port, and even larger ships are expected. Industry experts expect an increasing amount of containerized cargo to move in these mega ships in the future. A 55-foot-deep inbound channel would permit appropriate under-keel clearance for these larger ships and would provide for more efficient and safe navigation.

## **Environmental Impacts**

Substantial environmental studies were accomplished during the period from 1982 to 1985 by Federal agencies, state and university research laboratories, and private contractors under provisions of PL 99-88, as described previously for the 55-foot-deep outbound lane of the Norfolk Harbor and Channels project (Concern Number 2). All NEPA and related documentation have been fully satisfied but will require updating prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** As previously discussed in Section II, the 55-foot inbound element is part of the Norfolk Harbor and Channels project. Discussions included for Concern Number 9 are also applicable to this concern.

**Operation and Maintenance.** Discussions included for Concern Number 9 are also applicable to Concern Number 14.

### **Cost Sharing**

Discussions included for Concern Number 9 are also applicable to this concern. The following table shows the apportionment of Federal and non-Federal construction



costs. The incremental increase in average annual operation and maintenance costs associated with this element is estimated at \$700,000, of which \$350,000 would be a Federal responsibility and \$350,000 a non-Federal responsibility.

Table V-20. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 14

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,276	6,510.4	9,765.6
Dredge Thimble Shoal Channel	26,068	10,427.2	15,640.8
Dredge Channel to Newport News	26,144	10,457.6	15,686.4
Dredge Hampton Roads Anchorage F (1)	9,510	3,804.0	5,706.0
Dredge Sewells Point Anchorage	18,141	7,256.4	10,884.6
Remove wrecks	<u>868</u>	<u>347.2</u>	<u>520.8</u>
Subtotal	97,007	38,802.8	58,204.2
Engineering and design (2%)	1,940	776.0	1,164.0
Supervision and administration (4%)	<u>3,880</u>	<u>1,552.0</u>	<u>2,328.0</u>
Total	102,827	41,130.8	61,696.2
Construct Thimble Shoal tunnel cover	<u>4,184</u>	<u>0.0</u>	<u>4,184.0</u>
Grand total	107,011	41,130.8	65,880.2

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## **CONCLUSIONS**

This concern relates only to the northside of the Hampton Roads harbor and does not include all of the elements of the 55-foot inbound channel project; specifically, most of the Norfolk Harbor Channel. Also, it is related to Concerns Number 7 (tie) (the Norfolk Harbor Channel concern) and 9, since the resolution of these two concerns would fully address Concern Number 14. Concern Number 7 (tie) would provide for the deepening of all of the inbound channel elements needed for this concern, except for the Channel to Newport News element. Concern Number 9 requires the deepening of the outbound channel element of the Channel to Newport News and, since the outbound channel would be dredged over its fully authorized width of 800 feet, there would be no additional dredging required for the inbound channel element.

### **CONCERN NUMBER 15**

**NEED TO DEEPEN THE ENTIRE EASTERNMOST ANCHORAGE AREA  
OPPOSITE SEWELLS POINT (K-1) AND A SMALL SECTION OF CHANNEL  
TO 55 FEET TO PROVIDE EASIER TRANSIT BETWEEN THE NORFOLK  
HARBOR CHANNEL AND THE CHANNEL TO NEWPORT NEWS; IN  
ADDITION, THE K-1 ANCHORAGE WOULD NEED TO BE RELOCATED**

## **DESCRIPTION**

This concern expresses a need to deepen the K-1 Anchorage to 55 feet, including a small section of the Norfolk Harbor Channel adjacent to the anchorage area. Also included is a small area, adjacent to the K-1 Anchorage, known as the Naval Maneuvering Area.

## **PROPOSED ACTION**

In the case of this concern, it must be assumed that Concern Number 10 (tie) (the K-1 concern) has already been constructed. Indeed, this concern is identical to Concern Number 10 (tie), except that the depth would be increased from 50 feet to 55 feet rather than 45 feet to 50 feet. The discussions included under Concern Number 10 (tie) are equally applicable for this concern; however, the provision of a 55-foot depth would not

be appropriate unless and until the authorized depth of 55 feet is provided for the Hampton Roads harbor.

## **PLAN ACCOMPLISHMENTS**

A depth of 55 feet would provide safe and efficient maneuvering between channels for the largest bulk coal carriers and container ships and would be commensurate with deepening of the Hampton Roads harbor channels to the authorized depth of 55 feet.

## **ANALYSES**

There have been no economic evaluations made for this specific concern, although initial costs have been estimated to support this Navigation Management Plan.

### **Initial Construction Costs**

The following table shows the estimated construction costs based on October 1998 price levels, the most recent financial data available. A total of 3.1 million cubic yards of material would be dredged during the initial construction. Unlike the deepening elements discussed earlier, no studies or preliminary design have been conducted on this improvement, previous to its being included as part of the Navigation Management Plan. The estimates presented in the following table are for informational purposes and provide reasonable values that are valid for comparative purposes. Contingencies are included in each item, rather than in a single lump sum as a separate item. The costs for aids to navigation (the responsibility of the Coast Guard) are not included in these estimates. In addition, the estimates do not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan, and one that has not been completed, the Southern Branch PED. The total cost for the completed efforts is \$5,538,000 and, as of the end of Federal Fiscal Year 1999, the total cost of the third effort is \$3,360,000. Once a special effort is completed, its cost will be applied to the next major element of channel improvement to be constructed and will be cost shared with the non-Federal sponsor.

Table V-21. INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 15

<u>Item</u>	<u>Amount (\$1,000)</u>
Dredge K-1 Anchorage (1)	17,577
Engineering and design (2%)	352
Supervision and administration (4%)	<u>703</u>
Total	18,632

(1) Please see anchorage designations for (K-1), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

### **Operation and Maintenance Costs**

It is estimated that there would be an average annual increase of 60,000 cubic yards in dredged material removed to support the maintenance in this area over the existing depths. The incremental increase in average annual operation and maintenance costs, based on this additional quantity of dredged material, is estimated to be \$240,000 at October 1998 price levels.

### **Benefits**

The discussion of benefits contained under Concern Number 10 (tie) (the K-1 concern) are equally applicable here. The additional 5 feet of depth over that proposed for Concern Number 10 (tie) would permit the largest bulk coal carriers and container ships to safely and efficiently maneuver the turn area.

### **Environmental Impacts**

All NEPA and related requirements will be fully satisfied prior to construction.

## **DIVISION OF PLAN RESPONSIBILITY**

### **Action**

**Implementation.** The deepening of the K-1 Anchorage, a small part of the Norfolk Harbor Channel, and the Naval Maneuvering Area to 55 feet would require the joint efforts of the Commonwealth of Virginia, acting through its statutory agent, the VPA, and the Federal Government, acting through the Army Corps of Engineers, to obtain appropriate funding. In accordance with the WRDA 86, the VPA would be responsible for 60 percent of the general navigation features (10 percent of which can be paid over 30 years), excluding aids to navigation. The execution of the necessary Project Cooperation Agreement specific to this identified concern, the financing plan, and the escrow agreement would be required from the VPA.

**Operation and Maintenance.** Once constructed, maintenance dredging of the additional depth would be accomplished by the Corps of Engineers. In accordance with the provisions of Section 101(b) of the WRDA 86, 50 percent of the incremental operation and maintenance costs for depths in excess of 45 feet would be the responsibility of the Commonwealth.

### **Cost Sharing**

The cost-sharing requirements for this work are based on the provisions of the WRDA's 86 and 88 and current guidance and policies. The following table shows the apportionment of Federal and non-Federal construction costs. The incremental increase in average annual operation and maintenance costs associated with this project is estimated at \$240,000, of which \$120,000 would be a Federal responsibility and \$120,000 a non-Federal responsibility.

Table V-22. INITIAL CONSTRUCTION COST SHARING FOR CONCERN  
NUMBER 15

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge K-1 Anchorage (1)	17,577	7,030.8	10,546.2
Engineering and design (2%)	352	140.8	211.2
Supervision and administration (4%)	<u>703</u>	<u>281.2</u>	<u>421.8</u>
Total	18,632	7,452.8	11,179.2

(1) Please see anchorage designations for (K-1), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## CONCLUSIONS

The implementation of this concern is contingent upon the assumption that, at a minimum, Concerns Number 10 (tie) (the K-1 concern); 2 or 7 (tie) (the Norfolk Harbor Channel concern); and 9 or 14 have been provided. It is directly related to these five concerns. The concern, however, has substantial merit and will be so considered in Section VI.

## **SECTION VI**

# **LONG-RANGE PLANNING STRATEGY**

---

## **SECTION VI**

### **LONG-RANGE PLANNING STRATEGY**

---

#### **GENERAL**

The previous section of the Plan contains the individual evaluations of the most important problems, needs, concerns, and opportunities identified by stakeholders and prioritized by Circle "A" members. This section will incorporate these individual concerns into a long-range, comprehensive planning strategy that provides for the most efficient development of the port's navigation features and ensures that these features logically and effectively accommodate future use and growth. The following criteria were considered in the development of the planning strategy:

- Priority/Preference/Acceptability
- Costs
- Benefits
- Efficiency
- Environmental Impacts
- Completeness/Compatibility
- Effectiveness
- Funding/Cost-Sharing Capabilities

The priority/preference/acceptability criteria relate to the importance of each of the elements of the Plan to the stakeholders. They consider the workability and viability of the element with respect to the comprehensive long-range plan; its likely acceptance by Federal, state, regional, local, and private interests; and its compatibility with existing laws, regulations, and public policies.



Cost is always an important consideration in the formulation of long-range plans, especially in view of continuing funding constraints. In some cases, it may be practical to implement one or more of the lower costs elements of the Plan in the initial stages and defer the more costly elements until later.

Like costs, beneficial impacts are almost always important considerations in the formulation of long-range plans. Benefits attributable to the Navigation Management Plan could result from transportation savings from the use of larger vessels, more efficient use of existing vessels, reduction in transit time, lower cargo and tug assistance costs, and improved safety of operations. Both the magnitude and the wide-spread nature of the beneficial effects are important considerations in combining the elements into a long-range, comprehensive plan.

Efficiency is the extent to which the elements of the Plan are the most cost-effective means of addressing the specified concern and realizing the specified opportunities, consistent with protecting the region's environment. A measure of efficiency can be determined by comparing the prospective benefits of the planning element with its estimated costs.

Both favorable and unfavorable environmental effects must be considered in combining the elements of the Plan into a long-range, comprehensive planning strategy. Beneficial effects are favorable changes in the ecological, aesthetic, and cultural attributes of natural and cultural resources, while adverse environmental effects are unfavorable changes. Significant beneficial and adverse impacts, as they relate to the specific elements of the Plan, have been incorporated into the decision making process in developing the overall Plan for the port.

Completeness and compatibility are the extent to which the elements of the Plan provide and account for all necessary investments and other actions to ensure the realization of the planned effects. They also require relating the planning elements to other types of public and private actions to obtain optimum results.

Effectiveness is the extent to which the elements of the Plan alleviate the specified problems and achieve the specified opportunities.

The final criteria deal with funding and cost-sharing capability. The combining of the elements into a long-range, comprehensive Plan for the port requires active participation by all relevant Federal, state, local, and private interests. The costs of implementing the Plan are shared between Federal and non-Federal interests in accordance with the provisions of water resources development laws, specific requirements of acts authorizing projects and, in some cases, administrative instructions. The implementation of the elements of the Plan requires the availability of adequate and timely funding from Federal and non-Federal sources and the willingness and ability of non-Federal interests to participate in appropriate cost sharing.

## **LONG-RANGE STRATEGIC PLAN ELEMENTS**

The long-range, strategic plan is divided into two general categories: new construction elements and ongoing strategic elements. The new construction element section is further separated into channel elements and other elements. Channel elements include the various channel deepening considerations for the Norfolk Harbor Channel, the Channel to Newport News, the approach channels, the Elizabeth River Channel, the Southern Branch Channel, and the widening of the turning area at the Sewells Point Anchorage. Other new construction elements include the extension of the life of Craney Island Dredged Material Area and potential port development of the Craney Island Dredged Material Area. Ongoing strategic elements include maintenance dredging, funding, and water quality. Channel elements are discussed in the following paragraphs in order of their priority of implementation. The new construction elements associated with extending the useful life and port development of Craney Island Dredged Material Area and the ongoing strategic elements would be accomplished concurrently with the implementation of the channel elements of the Plan.

## NEW CONSTRUCTION ELEMENTS

### Channels

#### **Inbound Channels to 50 Feet Deep.**

- **Norfolk Harbor Channel** - The first element of the Plan considered for implementation is the deepening of the inbound lane of the Norfolk Harbor Channel from 45 feet to 50 feet to Lamberts Point. Although this is ranked as Concern Number 5 in the previous section, its selection as the top priority element for implementation is valid for the following reasons. Concern Number 1, maintenance dredging, is an ongoing strategic element that is accomplished concurrently with new channel construction. Concerns Number 3 and 4, which are associated with the use and development of the Craney Island Dredged Material Area, will also be accomplished concurrently with new channel construction elements. Concern Number 2, the 55-foot-deep outbound element of the Norfolk Harbor Channel, is a new channel construction element; however, its ranking has been overcome by events and superseded by Concern Number 5. Subsequent to the identification and ranking of the concerns, discussions were initiated in November 1998 between representatives of the Corps of Engineers and the VPA regarding the accomplishment of the PED phase for the 50-foot-deep inbound channel. This effort should be completed by September 2002, with the initiation of construction planned in May 2003. As shown in Section V, the cost of Concern Number 5 is \$20,936,000; however, this figure does not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan. The combined cost of these specialized efforts is \$5,538,000, and it will be cost shared with the non-Federal sponsor. This brings the total cost of Concern Number 5 to \$26,474,000. One other specialized effort that has not been completed, Southern Branch PED, will be applied to the next major element of channel improvement to be constructed after that special effort is completed. The cost of the Southern Branch effort, \$3,360,000 as of the end of Federal Fiscal Year 1999, will also be shared with the non-Federal sponsor. Based on experience with the maintenance of the 50-foot outbound element, it is anticipated that there will be no significant incremental increase in average

annual operation and maintenance costs for Concern Number 5. While the benefits expected from provision of this element have not been quantified, based on the increasing size of container ships as described in Section V, beneficial impacts are likely to be substantial. Detailed studies, which will be accomplished in the PED phase, will clearly show the relationship of average annual benefits and average annual costs, demonstrating the economic efficiency of this element. Also, all NEPA and related requirements will be updated prior to construction. This element of the Plan will provide the navigation features, i.e. a 50-foot-deep inbound channel, which will permit the port to accommodate large container ships safely and efficiently. It will require investments by non-Federal interests to provide commensurate depths for access channels and berthing areas to provide the capability to take full advantage of the 50-foot main channel depths. Investments will also be required at terminals to ensure that transfer facilities are adequately upgraded to accommodate larger vessels. The accomplishment of all the features of this element will provide the most effective means of alleviating the problems involved with this concern. The cost-sharing requirements for this element are discussed in the previous section. Its implementation will require adequate and timely funding from both Federal and non-Federal sources. The Commonwealth of Virginia, acting through its statutory agent, the VPA, is the local sponsor for this element, and it is believed that the Commonwealth possesses both the ability and willingness to provide the appropriate items of local cooperation, including cost sharing.

- **Widening Turn at Sewells Point (K-1) Anchorage** - This element of the Plan is considered for implementation following the previously discussed element. It consists of deepening the K-1 Anchorage Area and relocating the existing anchorage area to an alternative site. (The small section of the adjacent channel would have already been deepened to 50 feet during the construction of the 50-foot inbound portion of the Norfolk Harbor Channel.) This relocation would necessitate the deauthorization of the existing anchorage site and the consideration of a newly authorized area to be evaluated in a comprehensive anchorage analysis for the entire port. This analysis could be conducted as part of the PED phase of a major channel deepening or as a separate investigation. Although this is ranked as Concern Number 10 (tie) in Section V, its selection as the next

element to be constructed is believed to be valid because it would provide a complete, one-level channel at the 50-foot depth, thus permitting a safer and more efficient turn to facilitate the maneuvering of large vessels from one channel to the other. As shown in the previous section, the total construction cost of this element of the Plan is \$27,046,000. While no monetary benefits have been quantified for implementing this element of the Plan, it would permit large vessels to make the turn from one channel to the other with reduced tug assistance and would enhance navigation in the port by providing additional safety, effectiveness, and efficiency of operations. It is expected that the element would be economically efficient with average annual benefits exceeding average annual costs. With respect to environmental impacts, all NEPA and related requirements will be fully satisfied prior to construction. The provision of this element of the Plan would complete the 50-foot channel system within the port. It would provide the most effective means of alleviating the problems associated with the difficult channel turn in the vicinity of the K-1 Anchorage. The cost-sharing requirements for this element are discussed in the previous section. It is believed that the Commonwealth of Virginia has the ability and willingness to provide the appropriate cost sharing required for implementation of this element of the Plan.

#### **Outbound Channels to 55 Feet Deep.**

- **Norfolk Harbor Channel and Channel to Newport News** - The deepening from 50 feet to 55 feet of two channels--the Norfolk Harbor Channel and the Channel to Newport News--ranks as Concerns Number 2 and 9, respectively, in the previous section. These elements of the Plan are considered concurrently. The combined total cost of implementing the 55-foot-deep outbound channels is estimated at \$140,474,000. The cost-sharing requirements for each of these two elements are shown separately in Section V; however, the following table shows the combined requirements. The incremental increase in average annual operation and maintenance costs is estimated at \$1,220,000 for the combined elements. The Commonwealth of Virginia would also share in the incremental increase in average annual operation and maintenance costs associated with this element estimated at \$550,000; the Federal share would be \$670,000. The most recent estimate of benefits, as discussed in Section V, was based on 1989 price

levels. Average annual benefits were estimated at \$22.2 million, clearly exceeding average annual costs and demonstrating the economic efficiency of this element. As with all the elements associated with deepening the port's main channels, all NEPA and related requirements have been fully satisfied but will be updated prior to construction. The combining of these two elements for both the southside and northside of the Hampton Roads harbor includes all of the elements of the 55-foot outbound channel project and provides a complete and compatible plan. The completeness of the Plan requires investments by non-Federal interests to provide commensurate depths for access channels and berthing areas to take full advantage of the 55-foot-deep main channels. When combined with the other elements of this grouping, they provide the most effective means of alleviating the problems involved with these concerns.

Table VI-1. COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER  
2 AND 9

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,255	6,502.0	9,753.0
Dredge Thimble Shoal Channel	28,121	11,248.4	16,872.6
Dredge Norfolk Harbor Channel	24,814	9,925.6	14,888.4
Dredge Channel to Newport News	26,144	10,457.6	15,686.4
Dredge Hampton Roads Anchorage F (1)	9,510	3,804.0	5,706.0
Dredge Sewells Point Anchorage	18,141	7,256.4	10,884.6
Remove wrecks	<u>868</u>	<u>347.2</u>	<u>520.8</u>
Subtotal	123,853	49,541.2	74,311.8
Engineering and design (2%)	2,477	990.8	1,486.2
Supervision and administration (4%)	<u>4,954</u>	<u>1,981.6</u>	<u>2,972.4</u>
Total	131,284	52,513.6	78,770.4
Relocate/replace 36-inch water main	5,006	0.0	5,006.0
Construct Thimble Shoal tunnel cover	<u>4,184</u>	<u>0.0</u>	<u>4,184.0</u>
Total	9,190	0.0	9,190.0
Grand total	140,474	52,513.6	87,960.4

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

- **Widening Turn at Sewells Point (K-1) Anchorage** - This element of the Plan is considered for implementation following the previously discussed element. Although it is ranked as Concern Number 15 in order of priority, including it as part of the 55-foot-deep outbound system is believed to be valid, since it is the provision of the 55-foot-deep channels that creates the need to address this specific concern. Implementation of an earlier element of the Plan, the widening of the turn at Sewells Point K-1 Anchorage to a depth of 50 feet, would have been previously accomplished, so that the requirement to address this specific concern would consist of deepening the turning area an additional 5 feet. As shown in Section V, the total construction cost of this element of the Plan is \$18,632,000, with an incremental increase in average annual operation and maintenance costs of \$240,000. While no benefits have been quantified for implementing this element of the Plan, the additional 5 feet of depth would permit the largest bulk coal carriers and container ships to safely and efficiently maneuver the turn area. It is estimated that the increased efficiency and safety of operations would provide sufficient economic benefits to justify the implementation of this element. With respect to the environmental effects, all NEPA and related requirements will be fully satisfied prior to construction. The provision of this element of the Plan following the construction of the 55-foot-deep outbound channels would be an important and needed adjunct to the deepened channels, thus, permitting the deep-draft vessels to maneuver in the turning area between the Norfolk Harbor Channel and the Channel to Newport News. The cost-sharing requirements of this element are discussed in Section V. It is believed that the Commonwealth of Virginia has the ability and willingness to provide the appropriate cost sharing required for implementation of this element of the Plan.

**Elizabeth River Channel (Port Norfolk and Town Point Reaches) and Southern Branch Channel (Lower and Middle Reaches) to 45 Feet Deep.** The deepening from 40 feet to 45 feet of two channels in these reaches--the Elizabeth River Channel and Southern Branch Channel--ranks as Concerns Number 6 and 10 (tie), respectively, in the previous section. These elements of the Plan are considered concurrently to include the entire existing 40-foot project reach from Lamberts Point to the Norfolk Southern Railroad bridge. It would not be possible to address the Southern



Branch element without first addressing the Elizabeth River element. The combined total cost of implementing these combined elements is estimated at \$23,510,000. The cost-sharing requirements for each of these two elements are shown separately in Section V; however, the following table shows the combined requirements. The incremental increase in average annual operation and maintenance costs is estimated at \$150,000 for the combined elements, all of which would be paid by the Federal Government. The most recent estimate of benefits, as discussed in Section V, was based on October 1986 price levels and indicated an average annual value of over \$15 million. The project was economically justified at the time, but an updated economic analysis will be required prior to initiating construction to reflect changes in the quantity and type of commodities being currently transported on the channel. Although extensive environmental investigations have already been accomplished, it is expected that additional studies will be required to support the preparation of appropriate NEPA documents prior to construction. The combining of these two elements provides a complete and compatible plan for this portion of the harbor. The completeness of the Plan requires investments by non-Federal interests to provide commensurate depths for access channels and berthing areas in order to take full advantage of the 45-foot-deep main channel. The deepening of these two elements to 45 feet provides the most effective means of alleviating the problems involved with this concern.

Table VI-2. COMBINED IMPLEMENTATION COSTS FOR CONCERNS  
NUMBER 6 AND 10 (TIE)

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Elizabeth River Channel (Port Norfolk and Town Point Reaches)	9,842	6,397.3	3,444.7
Dredge Southern Branch Channel (Lower and Middle Reaches)	7,209	4,685.9	2,523.1
Craney Island tolls	<u>4,840</u>	<u>3,146.0</u>	<u>1,694.0</u>
Subtotal	21,891	14,229.2	7,661.8
Engineering and design (2%)	438	284.7	153.3
Supervision and administration (4%)	<u>876</u>	<u>569.4</u>	<u>306.6</u>
Total	23,205	15,083.3	8,121.7
Remove cables	<u>305</u>	<u>0.0</u>	<u>305.0</u>
Grand total	23,510	15,083.3	8,426.7

**Southern Branch Channel to 40 Feet Deep (Upper Reach).** This element of the Plan is ranked as Concern Number 12 priority and consists of deepening a portion of the Upper Reach of the Southern Branch Channel from 35 feet to 40 feet from the Norfolk Southern Railroad bridge to the Gilmerton Bridge. Although this is ranked Concern Number 12 in Section V, its selection as the next element to be constructed is believed valid, since it will complete the Southern Branch project. As shown in Section V, the total construction cost of this element of the Plan is \$20,430,000, with an incremental increase in average annual operation and maintenance costs of \$200,000. The most recent estimate of benefits, as discussed in Section V, was based on October

1988 price levels and indicated an average annual value of \$31 million. The project was economically justified at that time, but an updated economic analysis will be required prior to initiating construction to reflect potential changes in the quantity and type of commodities being currently transported on the channel. Although all NEPA and related requirements have been fully satisfied, they will require updating prior to construction. This element of the Plan will provide the navigation features, i.e. a 40-foot-deep channel that will benefit deep-draft vessels in the coastwise and foreign trade, which transport petroleum, grain, general cargo, and miscellaneous dry and liquid bulk commodities to and from terminals on the Southern Branch. It will require investments by non-Federal interests to provide commensurate depths for access channels and berthing areas to provide the capability to take full advantage of the 40-foot-deep main channels. Investments will also be required at adjacent terminals to ensure that transfer facilities are adequate to accommodate larger vessels. The accomplishment of all of the features of this element will provide the most effective means of alleviating the problems and obtaining the opportunities associated with this concern. The cost-sharing requirements for this element are discussed in Section V. Its implementation will require adequate and timely funding from both Federal and non-Federal sources. Final cost sharing and financing will be coordinated with the VPA in accordance with the WRDA 86, as amended, and other relevant policies.

**Inbound Channels to 55 Feet Deep.** The deepening from 45 feet to 55 feet in the Norfolk Harbor Channel and from 50 feet to 55 feet in the Channel to Newport News ranks as Concerns Number 7 (tie) and 14, respectively, in Section V. Although these elements of the Plan are considered concurrently, it is likely that no action would be required to provide the Channel to Newport News element, since the outbound channel would have been deepened earlier over its full authorized width of 800 feet in accomplishing the higher-prioritized 55-foot-deep outbound element of the Plan. With regard to Concern Number 7 (tie), the Norfolk Harbor Channel would have already been deepened from 45 feet to 50 feet in accomplishing the higher-prioritized Concern Number 5; therefore, Concern Number 7 (tie) considers here the deepening from 50 feet to 55 feet only. The cost of implementing these elements, separately, is shown in

Section V for comparative purposes; however, there would be no additional dredging requirements for the inbound Channel to Newport News due to the implementation of related elements previously. The following table, therefore, shows the total cost of implementing this element of the Plan, assuming that earlier, higher priority elements are in place. The incremental increase in average annual operation and maintenance costs is estimated at \$600,000. The Commonwealth of Virginia would also share in the incremental increase in average annual operation and maintenance costs associated with this element estimated at \$300,000; the Federal share would be \$300,000. While benefits attributable to the provision of this element have not been quantified, a 55-foot-deep inbound channel would permit appropriate under-keel clearances for the largest container ships providing for efficiency and safety of operations. Detailed studies would be accomplished to demonstrate the economic efficiency of this element prior to initiating construction. Also, all NEPA and related requirements will be updated at the time. Implementation of this element will require investments by non-Federal interest to provide commensurate depths for access channels and berthing areas to provide the capability to take full advantage of the 55-foot main channel depths. Investments may also be required at terminals to ensure that transfer facilities are adequate to accommodate larger vessels. The accomplishment of all the features of this element will provide the most effective means of alleviating problems and providing opportunities, and it will complete the 55-foot channel deepening for the port.

Table VI-3. COMBINED IMPLEMENTATION COSTS FOR CONCERNS  
NUMBER 7 (TIE) AND 14

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,276	6,510.4	9,765.6
Dredge Thimble Shoal Channel	13,917	5,566.8	8,350.2
Dredge Norfolk Harbor Channel	24,599	9,839.6	14,759.4
Dredge Channel to Newport News	<u>(1)</u>	<u>(1)</u>	<u>(1)</u>
Subtotal	54,792	21,916.8	32,875.2
Engineering and design (2%)	1,096	438.4	657.6
Supervision and administration (4%)	<u>2,192</u>	<u>876.8</u>	<u>1,315.2</u>
Total	58,080	23,232.0	34,848.0

(1) This channel was dredged to its full width during the construction of the 55-foot outbound element.

## **Other**

**Extend Life of Craney Island Dredged Material Area.** Extending the life of Craney Island Dredged Material Area is ranked as Concern Number 3 in Section V. Stakeholders recognize the importance to the port of providing long-term economical placement capability for future dredging operations. This element of the Plan is directly related to the new construction channel elements and to maintenance dredging; its implementation will be considered concurrently with the highest prioritized elements of the comprehensive Plan. As discussed in Section V, a reconnaissance study completed in March 1999 determined there is a Federal interest in proceeding to a feasibility study to evaluate the potential eastward expansion of Craney Island Dredged Material Area and other potential alternative long-term placement areas. This study is scheduled for

completion in March 2002 and will provide detailed analyses regarding construction costs, operation and maintenance costs, benefits, environmental impacts, and appropriate cost sharing between Federal and non-Federal interests for recommendations to increase the dredged material placement capacity in the Hampton Roads area.

**Port Development of Craney Island Dredged Material Area.** Immediately after extending the life of Craney Island Dredged Material Area is a directly-related concern, Port Development of Craney Island Dredged Material Area, which is ranked as Concern Number 4. These two concerns must be considered together due to their integral relationship. As discussed in Section V, the use of a portion of the Craney Island Dredged Material Area for future port development would help provide for continued port growth and would help keep the Port of Hampton Roads, as well as the nation, competitive in world trade. The previously mentioned feasibility study would also address the potential expansion of the Craney Island Dredged Material Area for port development.

## **ONGOING STRATEGIC ELEMENTS**

### **Maintenance Dredging**

The Corps of Engineers' program to provide maintenance dredging of the main channels of the port at appropriate intervals to ensure that proper dimensions are available for efficient, effective, and safe navigation is ranked as Concern Number 1. Stakeholders recognize the importance of maintenance dredging in supporting substantial port industry and military activities within the region. Obviously, maintenance dredging activities are accomplished concurrently and continuously with all other elements of the Plan. Proper and timely maintenance dredging will continue into the future, as it has in the past, depending on appropriate funding levels and the continued availability of the Craney Island Dredged Material Area or similar alternative placement site.

## **Funding**

As discussed in Section V, funding is always a concern, since there are seldom sufficient funds to accomplish all that is desired. Ranked as Concern Number 7 (tie), the availability of appropriate funds at the proper time is the key to implementing all the concerns discussed in this Plan. A primary objective of this Plan is to assist decision makers in arriving at more informed judgements regarding the port's future navigation problems, needs, concerns, and opportunities by establishing priorities of action. It is anticipated that the Plan will help in the budgeting and allocation of available funds to the highest prioritized concerns. Also, implementation of the elements of the Plan require, in many instances, appropriate cost sharing between Federal and state interests, as well as coordinated investments by private interests to fully accomplish each element's objectives. The Navigation Management Plan will help facilitate the necessary planning and other actions to coordinate the proper timing of funding so that implementation may be accomplished in an effective manner.

## **Water Quality**

Stakeholders recognize water quality and related environmental preservation actions (ranked as Number 13) as important aspects of port operation, use, and maintenance. It is an ongoing element of the Plan and is given full consideration in the implementation of the other elements, which comprise the comprehensive Plan. Section III discusses two studies, the Elizabeth River Environmental Restoration Study and the proposed Lynnhaven River Restoration Study, which will assist in addressing water quality problems and needs within the area. Federal, state, and local programs currently address water quality concerns within the port. Section V discusses the role of the Virginia DEQ in developing and implementing policies, programs, and procedures to assure the proper use and management of the Commonwealth's water resources. The implementation of the elements of the Plan requires that, at a minimum, all water quality and other environmental requirements are fully complied with by both private and governmental interests. Implementation of voluntary innovative and restorative measures to improve water quality would greatly assist in addressing this concern. Information

regarding various award and financial incentive programs for environmental stewardship may be found in Appendix H.

## **SUMMARY**

The following table shows a summary of the elements of the comprehensive Plan, indicating the proposed order of implementation, Circle "A" priority ranking, current status, estimated future action required for implementation, and estimated time frame for accomplishing the future action required.



Table VI-4. LONG-TERM PLANNING STRATEGY SUMMARY (1)

Element	Order of implementation	Circle "A" priority	Current status	Future action required	Time frame for accomplishing future action required (2)
Inbound channels to 50-foot depth	1	5	In PED (3)	Complete PED and construct	Short term
Widening turn at Sewells Point (K-1) anchorage to 50-foot depth (4)	2	10 (tie)	N/A	Obtain formal local sponsor support and funding for PED	Short term
Outbound channels to 55-foot depth	3	2 and 9	Authorized for construction	Obtain formal local sponsor support and funding for PED	Mid term
Widening turn at Sewells Point (K-1) anchorage to 55-foot depth (4)	4	15	N/A	Obtain formal local sponsor support and funding for PED	Mid term

Table VI-4. LONG-TERM PLANNING STRATEGY SUMMARY (1)  
(Cont'd)

Element	Order of implementation	Circle "A" priority	Current status	Future action required	Time frame for accom- plishing future action required (2)
Elizabeth River and Southern Branch Channels to 45-foot depth	5	6 and 10 (tie)	Authorized for construction	Obtain formal local sponsor support and funding for PED	Long term
Southern Branch Channel (Upper Reach) to 40-foot depth	6	12	Authorized for construction	Obtain formal local sponsor support for completion of PED	Long term
Inbound channels to 55-foot depth	7	7 (tie) and 14	Authorized for construction	Complete PED	Long term
Extend life of Craney Island Dredged Material Area	Concurrent with channel elements	3	Feasibility report underway	Complete feasibility report and initiate PED	Mid term

Table VI-4. LONG-TERM PLANNING STRATEGY SUMMARY (1)  
(Cont'd)

Element	Order of implementation	Circle "A" priority	Current status	Future action required	Time frame for accomplishing future action required (2)
Port development of Craney Island Dredged Material Area	Concurrent with channel elements	4	Feasibility report underway	Complete feasibility report and initiate PED	Mid term
Maintenance dredging	Ongoing	1	Ongoing	Obtain sufficient and timely funding	Ongoing
Funding	Ongoing	7 (tie)	Ongoing	Keep decision maker informed of needs and requirements	Ongoing
Water quality	Ongoing	13	Ongoing	Ensure rules and regulations are clearly defined and adequately enforced	Ongoing

(1) All depths refer to mean lower low water.

(2) Short term 1 to 3 years; mid term 3 to 10 years; long term over 10 years.

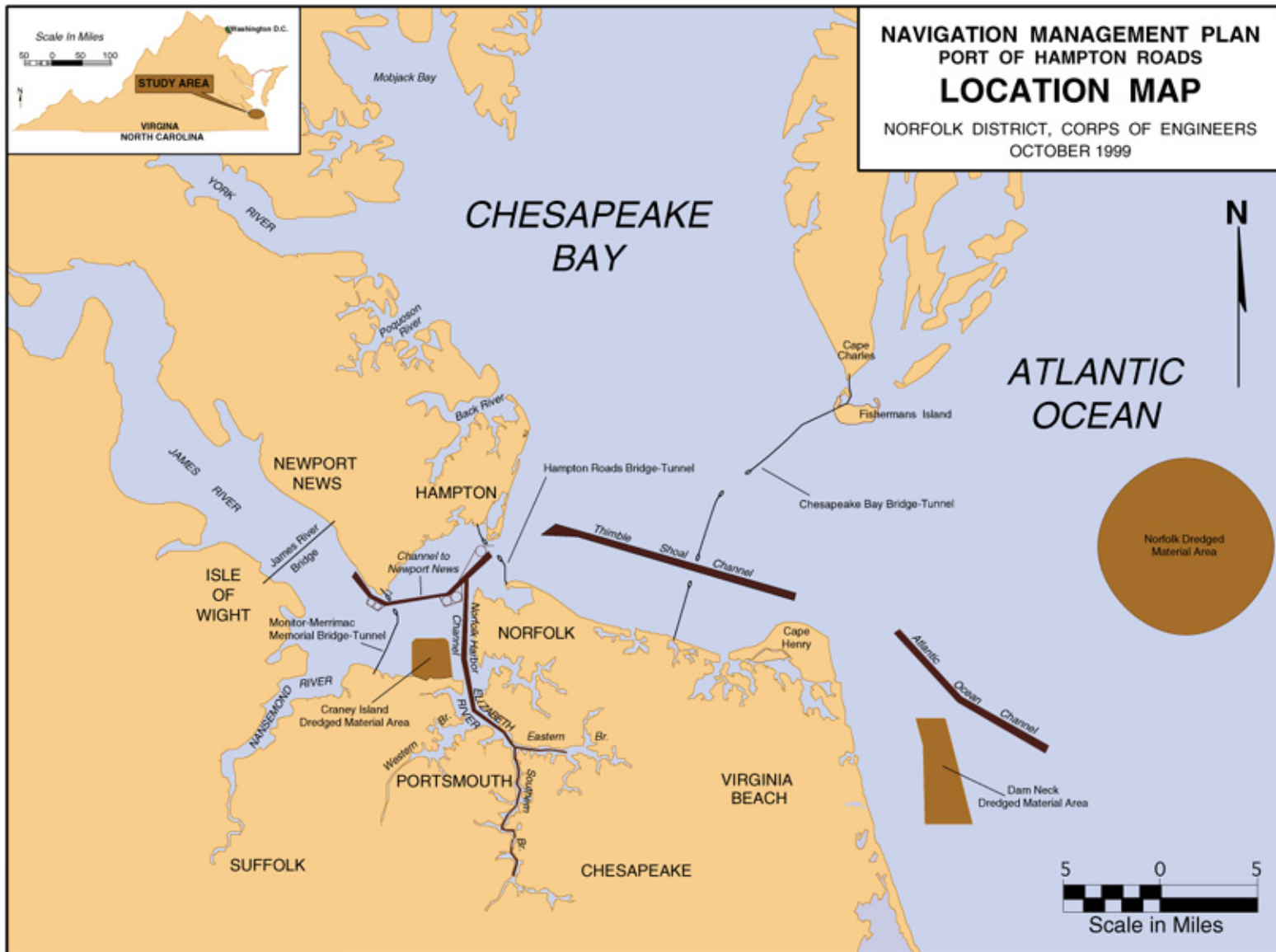
(3) PED stands for Preconstruction Engineering and Design Phase.

(4) Please see anchorage designations for (K-1), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

## **CONCLUSIONS**

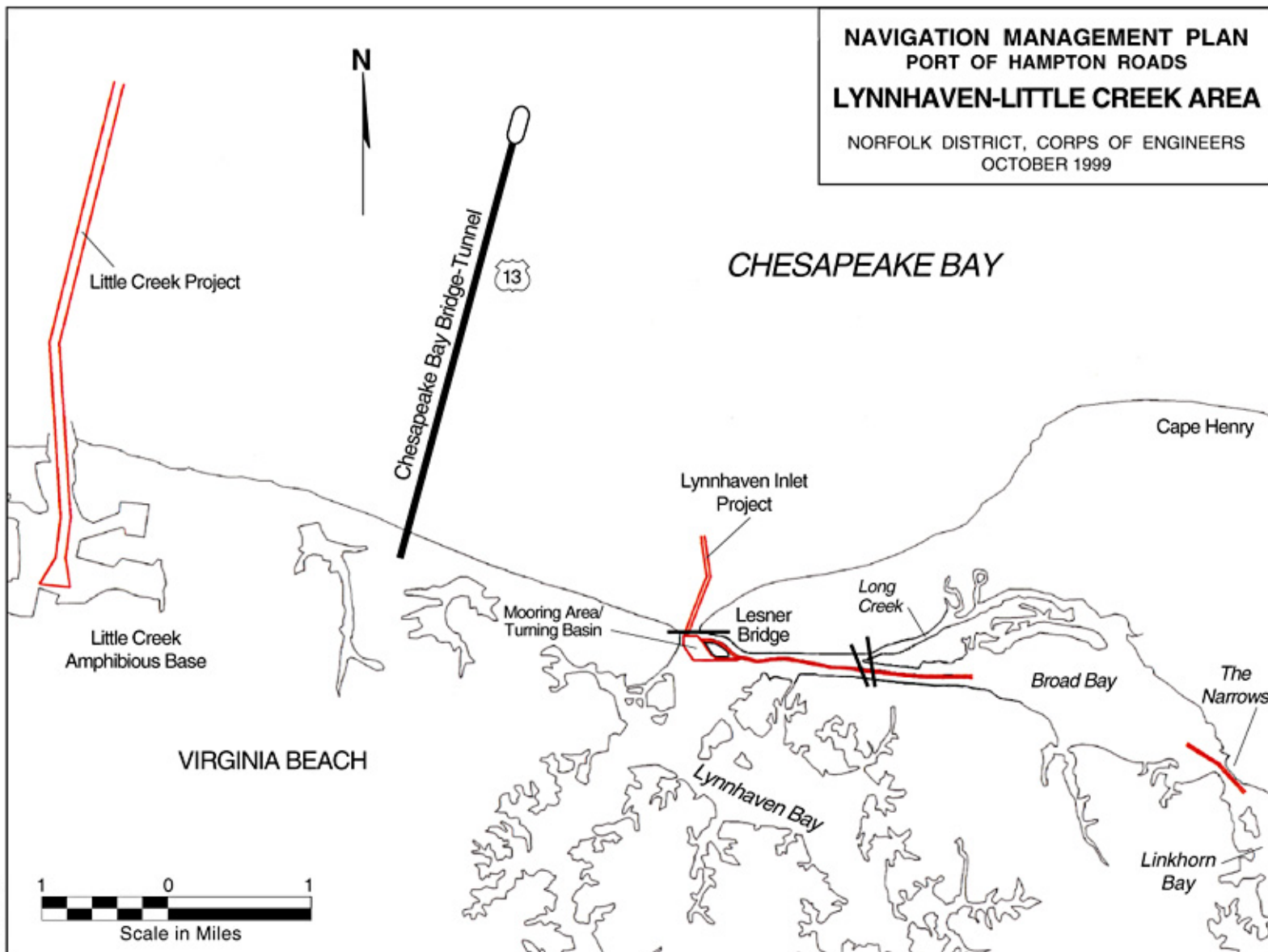
This section of the Plan incorporates the individual concerns of stakeholders into a logical, comprehensive plan based on the priorities established by Circle "A" members. The Plan is developed for planning purposes and to give appropriate decision makers information from which implementation and funding decisions may be made. The Plan is, of necessity, flexible and sensitive to the passing of time and events, and it will require periodic updating to keep it current and viable. It is likely that the future of the port will reflect the past and there will never be enough resources to accomplish all that is desired. The Navigation Management Plan will assist Federal, state, local, and private investors to better allocate scarce port resources based on the prioritized concerns established by port users and interests.

# **MAIN REPORT PLATES**



**NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS  
LYNNHAVEN-LITTLE CREEK AREA**

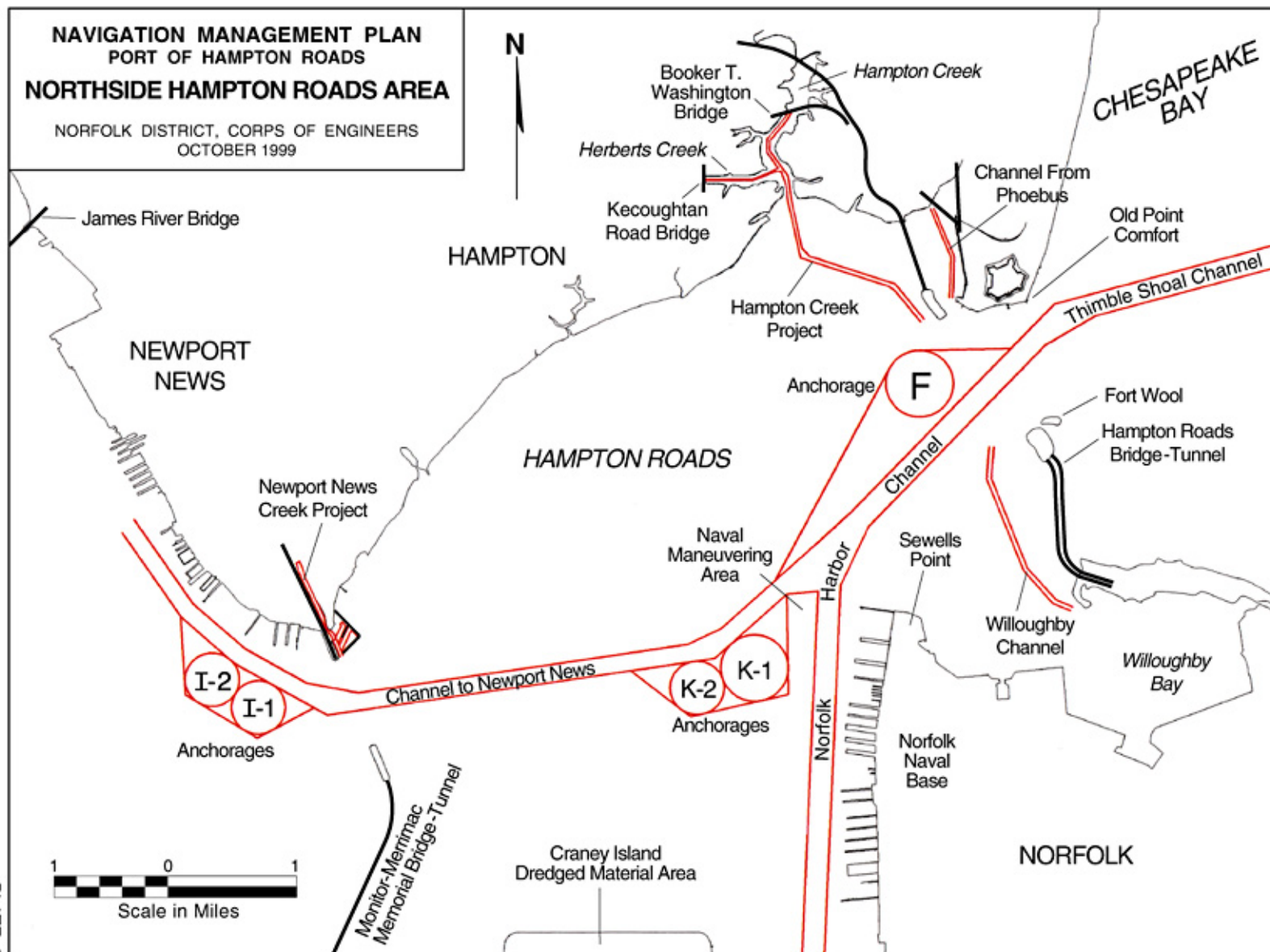
NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999



**NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS  
NORTHSIDE HAMPTON ROADS AREA**

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999

N

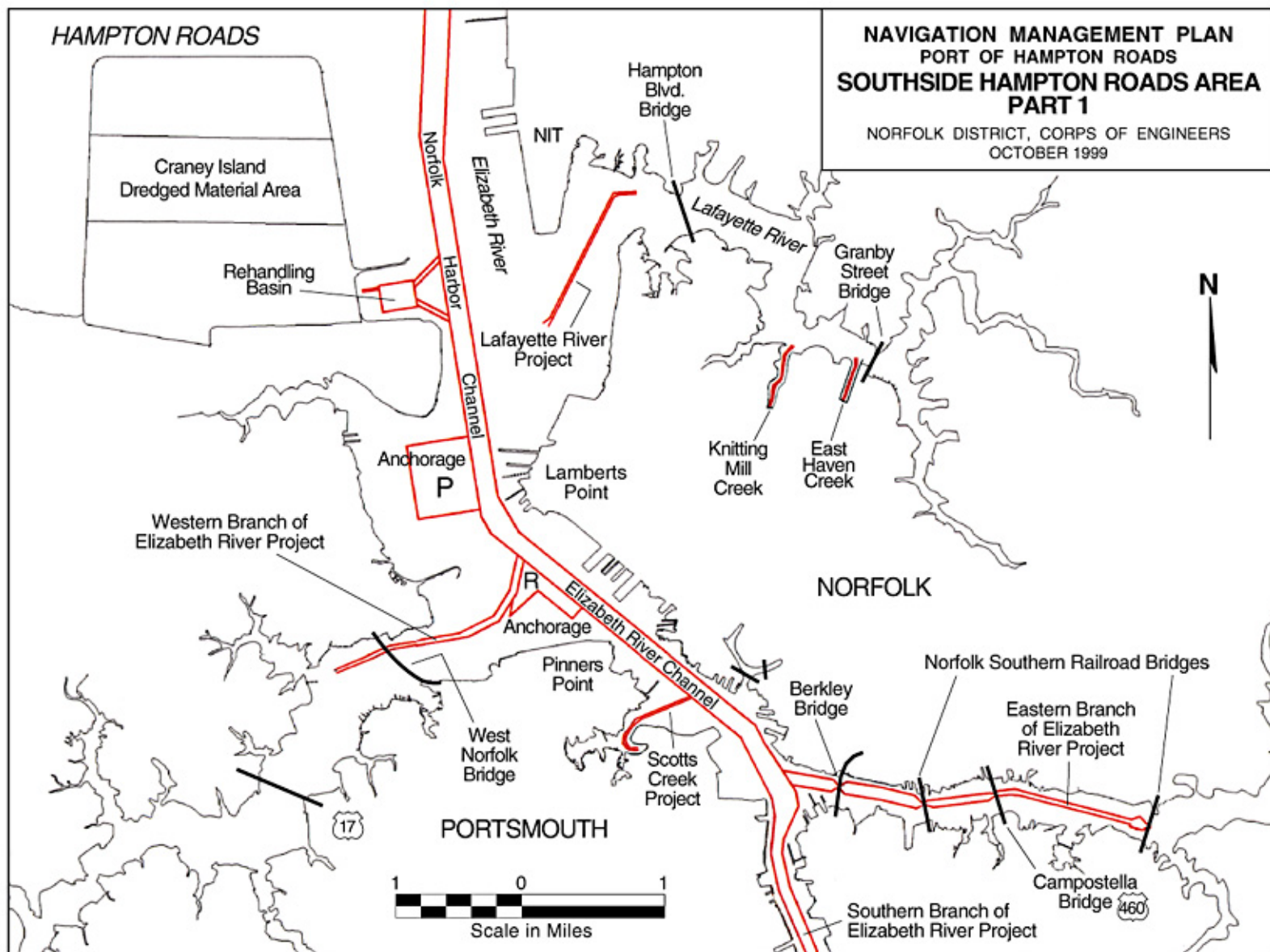




# HAMPTON ROADS

## NAVIGATION MANAGEMENT PLAN PORT OF HAMPTON ROADS SOUTHSIDE HAMPTON ROADS AREA PART 1

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999



PORTSMOUTH

**NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS  
SOUTHSIDE HAMPTON ROADS AREA  
PART 2**

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999

Norfolk & Portsmouth Beltline Railroad Bridge

Norfolk Naval  
Shipyard

Jordan Bridge

Paradise Creek

Norfolk Southern  
Railroad Bridge

Southern Branch of  
Elizabeth River Project

Mildam Creek

St. Julians Creek



Gilmerton Bridge  
&  
Norfolk Southern  
Railroad Bridge

Newton Creek

I-64 Bridge

CHESAPEAKE

Mains Creek

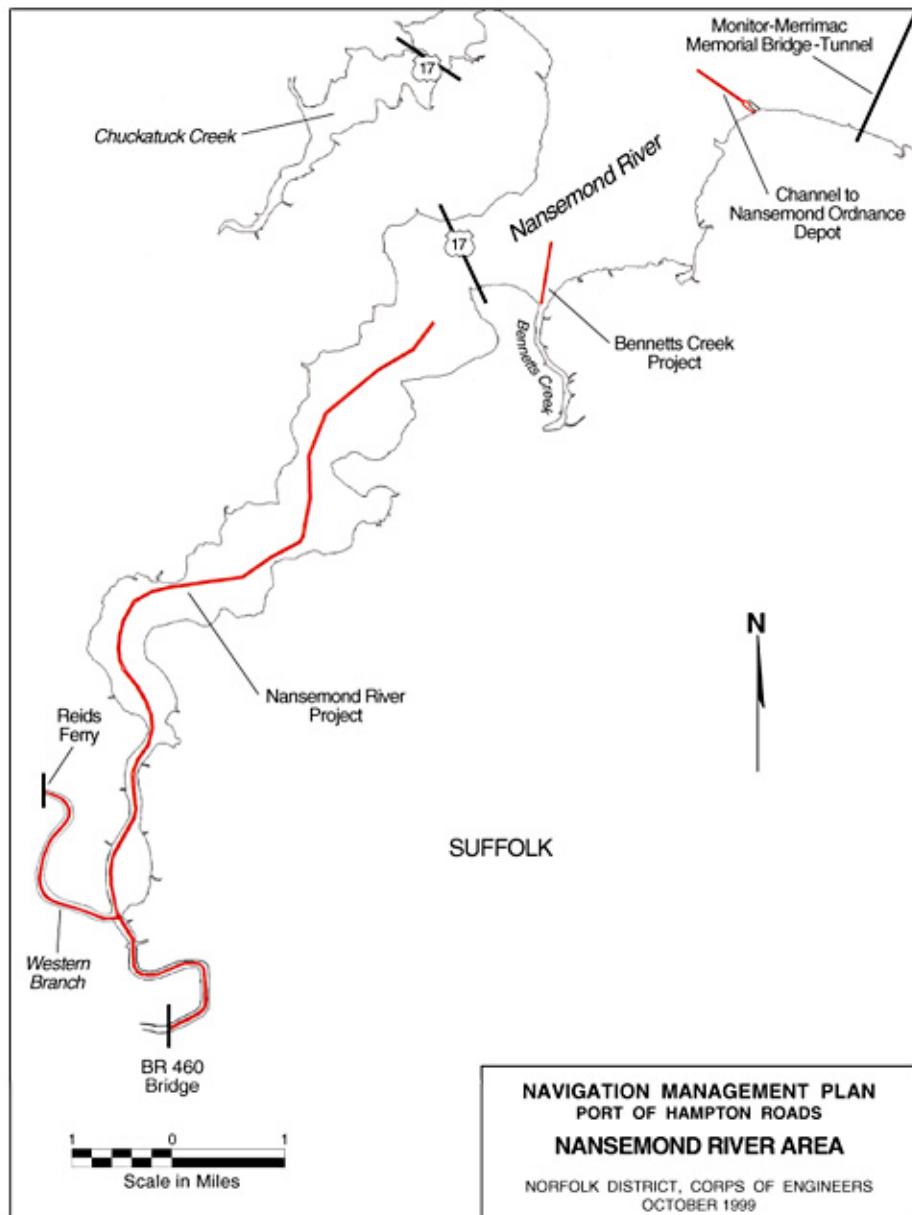
Deep Creek Lock

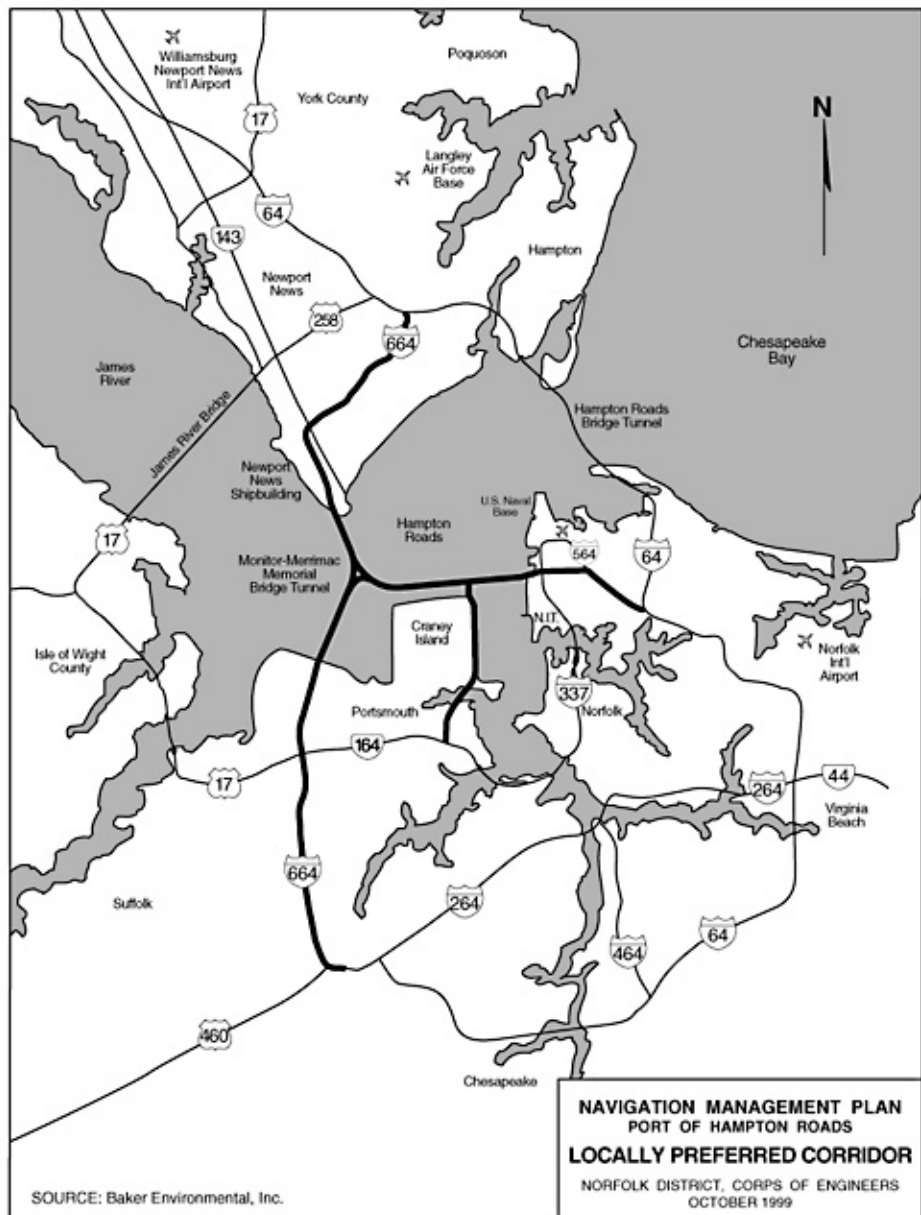
104

Great Bridge Lock



Scale in Miles





SOURCE: Baker Environmental, Inc.

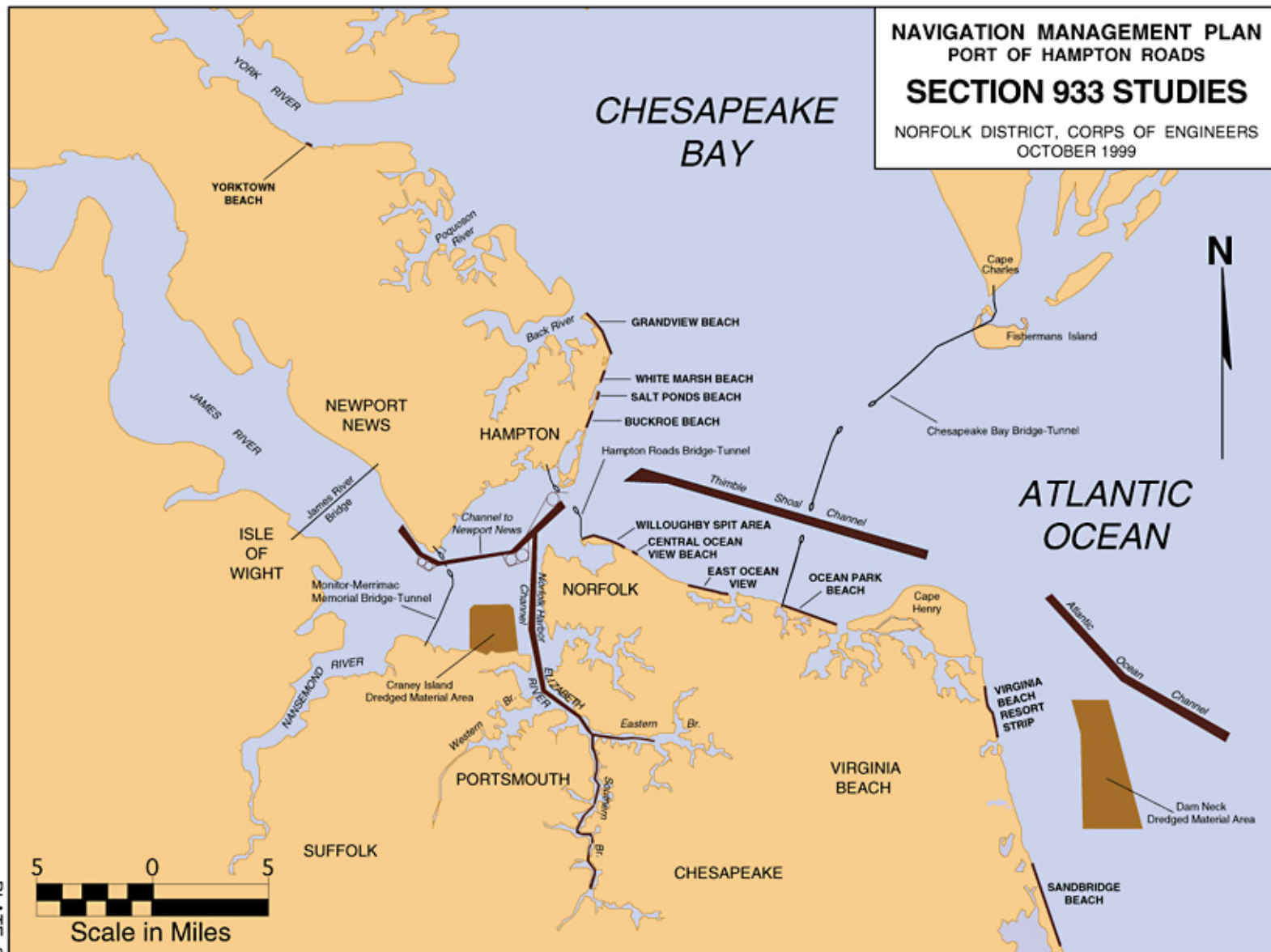
NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS

**SECTION 933 STUDIES**

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999

CHESAPEAKE  
BAY

ATLANTIC  
OCEAN



## **APPENDIX A**

## **GLOSSARY**

---

## APPENDIX A

### GLOSSARY (1)

---

Access channel: A channel that provides access to a single facility or area.

Advance maintenance dredging: The additional depth and/or width specified to be dredged beyond the project channel dimensions for the purpose of reducing overall maintenance costs by decreasing the frequency of dredging.

Aids to navigation: Buoys, beacons, fog signals, lights, radio beacons, range markers, and, generally, any charted or published information serving the interests of safe navigation.

Allowable overdepth: The additional depth below the required section specified in a dredging contract. This additional depth is permitted (but not required) because of inaccuracies in the dredging process.

Anchorage area: An area designated in port where vessels may anchor while waiting for berths, crews, tidal conditions, weather improvement, or repairs.

Appropriation: Congressional funding for the construction and maintenance of navigation channels and turning basins.

Authorization: Congressional approval for the construction and maintenance of navigation channels and turning basins.

Authorized dimensions: The length, width, and depth dimensions of a navigation project as specified in the authorizing document.

Bar: A submerged or emerged embankment of sand, gravel, or other unconsolidated material built on the sea floor in shallow water by waves and currents. See also "Sandbar."

Basic activity: Economic activity that is directly related to the port.

Basin, boat: A naturally or artificially enclosed or nearly enclosed harbor area for small craft.

Bathymetry: The measurement of depths of water in oceans, seas, and lakes; also information derived from such measurements.

Bay: A recess in the shore or an inlet of a sea between two capes or headlands, not so large as a gulf but larger than a cove.

Bight: A bend in a coastline forming an open bay. A bay formed by such a bend.

Breakbulk cargo: General cargo that is not packed in containers, such as rubber, cocoa beans, automobiles, and heavy machinery.

Breakwater: A structure protecting a shore area, harbor, anchorage, or basin from waves.

Bulk cargo: Dry and/or liquid commodities moving in large homogenous loads, such as coal, grain, crude petroleum, fertilizers, gypsum, and ores.

Buoy: A float; especially a floating object moored to the bottom to mark a channel, anchor, shoal, rock, etc.

Buoyancy: The resultant of upward forces, exerted by the water on a submerged or floating body, equal to the weight of the water displaced by this body.

Canal: An artificial watercourse cut through a land area for such uses as navigation and irrigation.

Cape: A relatively extensive land area jutting seaward from a continent or large island that prominently marks a change in, or interrupts notably, the coastal trend; a prominent feature.

Channel: The part of a body of water deep enough to be used for navigation, through an area otherwise too shallow for navigation. Channels can be either natural or artificial waterways. See "Navigation channel."

Chop: The short-crested waves that may spring up quickly in a moderate breeze, and that break easily at the crest.

Circle "A" stakeholders: The principal advisors and reviewers of the Navigation Management Plan.

Circle "B" stakeholders: The Circle "A" stakeholders and all the individuals and/or groups who are actively involved in the development of the Navigation Management Plan, primarily through participation in the workshops and/or other forms of communication to identify navigation concerns.

Circle "C" stakeholders: The Circle "A" and Circle "B" stakeholders and all others who are impacted by the Navigation Management Plan.

Clean Water Act: This act (33 United States Code 1251 et seq.) is the principle law governing pollution control and water quality of the nation's waterways. The objective of



this act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The act provides standards and enforcement, a number of regulatory programs with permits and licenses, and grants and revolving funds, as well as general provisions and provisions for research and related programs.

Coastwise shipments: Cargo that moves to other U.S. ports.

Constructed dimensions: Channel dimensions that have been provided by initial or new work dredging.

Container shipments: See "Containerized cargo."

Containerized cargo: Cargo that is packed and shipped in individual containers.

Continuing Authorities Program: A program under which the Secretary of the Army, acting through the Chief of Engineers, is authorized to plan, design, and construct certain types of water resources improvement without specific Congressional authorization.

Controlling depth: The least depth in the navigable parts of a waterway, governing the maximum draft of vessels that can enter.

Cove: A small, sheltered recess in a coast, often inside a larger embayment.

Cross-section: A view of the channel bottom and side slopes normal to the channel alignment.

Dead weight ton (DWT): The carrying capacity of a vessel in long tons (2,240 pounds). It is the difference between the light ship weight and the displacement loaded.

Deep-draft channel: A navigation channel with a depth greater than 20 feet at m.l.l.w.

Depth, controlling: See "Controlling depth."

Diurnal tide: A tide with one high water and one low water in a tidal day.

Dolphin: A cluster of piles.

Draft: The depth of water displaced by a vessel.

Dredged material placement area: A designated area for the deposition of dredged material.

Dredging: The practice of excavating and removing material from underwater locations, either by mechanical or hydraulic means.

Dredging cycle: The period of time, in years, between dredging events.

Dredging frequency: See "Dredging cycle."

Dredging process: Removal (usually from underwater), transportation, and placement of material.

Dredging template: A cross-sectional view of the navigation channel showing project depth, width, and side slopes.

Ebb tide: The period of tide between high water and the succeeding low water; a falling tide.

Embayment: An indentation in the shoreline forming an open bay.

Environmental Impact Statement (EIS): A detailed written statement, as required by the National Environmental Policy Act, that states that all agencies of the Federal Government shall include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on (1) the environmental impact of the proposed action, (2) any adverse environmental effects that cannot be avoided should the proposal be implemented, (3) alternatives to the proposed action, (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

Estuary: (1) The part of a river that is affected by tides. (2) The region near a river mouth in which the fresh water of the river mixes with the salt water of the sea.

Exports: Cargo that moves out of the port to a foreign destination.

Fathom: A unit of measurement used for soundings equal to 1.83 meters (6 feet).

Feasibility Cost-Sharing Agreement (FCSA): A legally binding contract between the Corps and a non-Federal sponsor that sets forth the responsibilities of each party in the feasibility phase of study. The cost of the study is shared on a 50/50 basis. Up to half of the non-Federal share can be furnished by in-kind services. A model FCSA has been adopted by the Corps of Engineers. Any deviations from the model FCSA must be approved by Corps higher authority.

Feasibility study: If the reconnaissance study determination is favorable, the study moves into the second phase--the feasibility study. The feasibility study is usually cost shared on a 50-50 basis with a non-Federal sponsor, is from 18 to 36 months in length, and involves significant field work and detailed analyses that lead to recommend solutions to water resources problems. The feasibility study is documented in a report that acts as a decision document for the authorization of a new Federal project.

Federally authorized project: A project that has been authorized by Congress.

Finding of No Significant Impact (FONSI): A document prepared by a Federal agency briefly presenting the reasons why an action, not otherwise excluded, will not have a significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared. It shall include the environmental assessment or a summary of it and shall note any other environmental documents related to it. If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference.

Flood tide: The period of tide between low water and the succeeding high water; a rising tide.

Following wind: See "Tail wind."

401 State Water Quality Certificate: This refers to Section 401 of the 1972 amendments of the Clean Water Act (33 United States Code 1341). This section of the Clean Water Act requires certification from the state or interstate water control agencies that a proposed water resources project is in compliance with established effluent limitations and water quality standards. Applicants for Federal permits or licenses are required to obtain this certification.

General cargo: Commodities handled in individual units that can be subdivided into breakbulk and container cargo.

General navigation feature: Any navigation channel, turning basin, anchorage, and dredged material placement area that is cost shared between the Federal Government and the local sponsor of a Federally authorized project. It excludes aids to navigation, which are paid fully by the Coast Guard, as well as lands, easements, rights-of-way, and relocations, which are the responsibility of the local sponsor.

Gulf: A large embayment in a coast; the entrance is generally wider than the length.

Harbor: Any protected water area affording a place of safety for vessels.

Host cities: The Cities of Newport News, Norfolk, and Portsmouth in which marine terminals of the Virginia Port Authority are located.

Hydraulic dredging: Dredging performed by a hydraulic dredge, which generally moves bottom material via a centrifugal pump and pipeline or hopper directly toward a dredged material placement area.

Hydrography: (1) A configuration of an underwater surface including its relief, bottom materials, coastal structures, etc. (2) The description and study of seas, lakes, rivers, and other waters.

Identified concerns: A problem, need, constraint, and/or opportunity designated by one or more of the stakeholders.

Inlet: (1) A short, narrow waterway connecting a bay, lagoon, or similar body of water with a large parent body of water. (2) An arm of the sea (or other body of water) that is long compared to its width and may extend a considerable distance inland. See also "Tidal inlet."

Items of local cooperation: All items for which a non-Federal cost-sharing sponsor is responsible in connection with the construction and maintenance of a Federal navigation project. These items are included in the Project Cooperation Agreement, which is the legal binding document executed between the Corps and the non-Federal sponsor. Items of local cooperation may include such things as cash contributions, lands, easements, rights-of-way, relocations, and access channels and berthing areas.

Jetty: On open seacoasts, a structure extending into a body of water that is designed to prevent shoaling of a channel by littoral materials and to direct and confine the stream or tidal flow. Jetties are built at the mouths of rivers or tidal inlets to help deepen and stabilize a channel.

Knot: The unit of speed used in navigation equal to 1 nautical mile (6,076.115 feet or 1,852 meters) per hour.

Lee: Shelter, or the part or side sheltered or turned away from the wind or waves.

Leeward: The direction toward which the wind is blowing; the direction toward which waves are traveling.

Loaded draft: The depth of water displaced by a vessel fully loaded.

Local Cooperation Agreement (LCA): An obsolete term that is the same as 221 Agreement and Project Cooperation Agreement. See "Project Cooperation Agreement."

Local sponsor: See "Non-Federal sponsor."

Maintained dimensions: Navigation channel dimensions (length, width, and depth) that are determined by user traffic, or other restrictions, that are less than or equal to the authorized dimensions or the constructed dimensions, if less than the authorized dimensions.

Maintenance dredging: The removal of shoal material from a constructed project.

Marsh: An area of soft, wet, or periodically inundated land, generally treeless and usually characterized by grasses and other low growth.

Mean high water (m.h.w.): The average height of the high waters over a 19-year period. For shorter periods of observations, corrections are applied to eliminate known variations and reduce the results to the equivalent of a mean 19-year value. All high water heights are included in the average where the type of tide is either semidiurnal or mixed. Only the higher high water heights are included in the average where the type of tide is diurnal. So determined, mean high water in the latter case is the same as mean higher high water.

Mean higher high water (m.h.h.w.): The average height of the higher high waters over a 19-year period. For shorter periods of observation, corrections are applied to eliminate known variations and reduce the result to the equivalent of a mean 19-year value.

Mean low water (m.l.w.): The average height of the low waters over a 19-year period. For shorter periods of observations, corrections are applied to eliminate known variations and reduce the results to the equivalent of a mean 19-year value. All low water heights are included in the average where the type of tide is either semidiurnal or mixed. Only lower low water heights are included in the average where the type of tide is diurnal. So determined, mean low water in the latter case is the same as mean lower low water.

Mean lower low water (m.l.l.w.): The average height of the lower low waters over a 19-year period. For shorter periods of observations, corrections are applied to eliminate known variations and reduce the results to the equivalent of a mean 19-year value. It is frequently abbreviated to lower low water.

Mean sea level: The average height of the surface of the sea for all stages of the tide over a 19-year period, usually determined from hourly height readings.

Mechanical dredging: Dredging performed with a mechanical dredge that normally lifts the dredged material above the waterline by means of buckets or scoops of various designs and deposits it into a barge or similar conveyance for transport and placement.

Mega ship: A term used generally for container ships with a capacity greater than 4,500 TEU's.

Memorandum of Agreement: A record of an arrangement between two or more individuals or entities that describes in detail the terms and provisions of the arrangement. The Corps often enters into Memorandum of Agreements with other Federal, state, and local agencies.

National Environmental Policy Act (NEPA): Public Law 91-190 (1969), 42 United States Code 4321-4347. The National Environmental Policy Act is our basic national charter for protection of the environment. It establishes policy, sets goals, and provides means for carrying out the policy. Its "action-forcing" provisions make sure that Federal agencies act according to the letter and spirit of the act.

Nautical mile: The length of a minute of arc, 1/21,600 of an average great circle of the Earth. Generally one minute of latitude is considered equal to one nautical mile. The

accepted United States value as of 1 July 1959 is 1,852 meters (6,076.115 feet), approximately 1.15 times as long as the U.S. statute mile of 5,280 feet.

Navigation channel: A project feature with authorized project limits/dimensions that is designed, constructed, and maintained for use by commercial and/or recreational navigation traffic. This definition includes appropriate harbors, canals, turning basins, anchorage/mooring areas, and/or waterways.

Navigation features: The structural components of harbors and waterways, such as main channels, anchorages, turning basins, breakwaters, jetties, and locks and dams.

Neap tide: A tide occurring near the time of quadrature of the moon with the sun. The neap tidal range is usually 10 to 30 percent less than the mean tidal range.

Non-Federal sponsor: A local, regional, or state entity that has the authority to provide all items of local cooperation including lands, easements, and rights-of-way. They must also be financially able to meet obligations under Project Cooperation Agreements. Cities, counties, towns, states, and port authorities may each serve as local sponsors.

Oceanography: The study of the sea, embracing and indicating all knowledge pertaining to the sea's physical boundaries, the chemistry and physics of seawater, marine geology, and marine biology.

Overdepth dredging: Any dredging below the authorized depth (or constructed depth if less than the authorized depth) to include required, allowable, and non-pay dredging overdepth.

Peninsula: An elongated body of land nearly surrounded by water and connected to a larger body of land.

Pier: A structure, usually of open construction, extending out into the water from the shore, to serve as a landing place, recreational facility, etc., rather than to afford coastal protection.

Pile: A long, heavy timber or section of concrete or metal to be driven or jetted into the earth or seabed to serve as a support or protection.

Piling: A group of piles.

Point: The extreme end of a cape; the outer end of any land area protruding into the water, usually less prominent than a cape.

Port: A place where vessels may discharge or receive cargo; it may be the entire harbor including its approaches and anchorages or only the commercial part of a harbor where the quays, wharves, facilities for transfer of cargo, docks, and repair shops are situated.

Post-authorization Corps of Engineers projects: Projects that have been Congressionally authorized.

Pre-authorization Corps of Engineers projects: Projects/studies that have not yet received Congressional authorization.

Prioritization criteria: Factors considered in ranking the navigation concerns.

Project Cooperation Agreement (PCA): A legally binding contract between the Corps and a non-Federal sponsor that sets forth the responsibilities of each party in the implementation of a project. This document includes the items of local cooperation. Model PCAs for the various project purposes, such as navigation and flood control, have been adopted by the Corps of Engineers.

Project Dimensions: See "Authorized dimensions."

Quay: A stretch of paved bank, or a solid artificial landing place parallel to the navigable waterway, for use in loading and unloading vessels.

Reconnaissance study: A study to determine whether or not the process of planning the development of a project should proceed to the second phase--the more detailed feasibility study. The reconnaissance study is conducted at full Federal cost, is generally 12 months in length, and uses existing information for its analyses.

Record of Decision (ROD): A concise public record that documents a Federal agency's final decision on a proposed action requiring an Environmental Impact Statement. The ROD shall: (1) state what the decision was; (2) identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives that were considered to be environmentally preferable; and (3) state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not.

Recreational craft: Non-commercial vessels used for recreational activity.

Required section: The channel dimensions required by a dredging contract.

Sandbar: In a river, a ridge of sand built up to or near the surface by river currents. See also "Bar."

Sea level: See "Mean sea level."

Sea state: Description of the sea surface with regard to wave action.

Seas: Waves caused by wind at the place and time of observation.

Secondary activity: Economic activity that supports one of the basic activities; the same as "Supporting activity."

Section 933 study: A study to determine the feasibility of placing suitable dredged material on a specific beach through a cost-shared placement operation and in conjunction with the dredging operations of Federally authorized navigation projects.

Sediment: Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity or ice and has come to rest on the Earth's surface either above or below sea level.

Shallow-draft channel: A channel with a depth of 20 feet or less at m.l.l.w.

Shoal (noun): A detached elevation of the sea bottom, comprised of any material except rock or coral, that may endanger surface navigation.

Shoal (verb): (1) To become shallow gradually. (2) To cause to become shallow. (3) To proceed from a greater to lesser depth of water.

Shoaling rate: The rate at which sediment fills a navigation channel, usually measured in terms of cubic yards per year.

Slack tide: The state of tidal current when its velocity is near zero, especially the moment when a reversing current changes direction and its velocity is zero. Sometimes considered the intermediate period between ebb and flood currents during which the velocity of the currents is less than 0.05 meter per second (0.1 knot).

Slack water: See "Slack tide."

Slip: A berthing space between two piers.

Sound (noun): (1) A wide waterway between the mainland and an island, or a wide waterway connecting two sea areas. See also "Strait." (2) A relatively long arm of the sea or ocean forming a channel between an island and a mainland or connecting two larger bodies, as a sea and the ocean, or two parts of the same body; usually wider and more extensive than a strait.

Sound (verb): To measure the depth of the water.

Sounding: A measured depth of water.

Spit: A small point of land or narrow shoal projecting into a body of water from the shore.

Spring tide: A tide that occurs at or near the time of new or full moon and that rises highest and falls lowest from the mean sea level.



Stakeholder: A person or group of persons whose participation is integral to the planning process.

State of sea: See "Sea state."

Still-water level: The elevation that the surface of the water would assume if all wave action were absent.

Strait: A relatively narrow waterway between two larger bodies of water. See also "Sound (noun)."

Supporting activity: Economic activity that supports one of the basic activities; same as "Secondary activity."

Tail wind: A wind having the same general direction as the course of a moving ship.

TEU: An abbreviation for twenty-foot equivalent unit, which is based on how many 20-foot-long containers a ship can carry.

Thalweg: In hydraulics, the line joining the deepest points of an inlet or stream channel.

Tidal flats: Marshy or muddy land areas that are covered and uncovered by the rise and fall of the tide.

Tidal inlet: (1) A natural inlet maintained by tidal flow. (2) Loosely, any inlet in which the tide ebbs and flows. See also "Inlet."

Tidal period: The interval of time between two consecutive, like phases of the tide.

Tidal range: The difference in height between consecutive high and low (or higher high and lower low) waters.

Tide: The periodic rising and falling of the water that results from gravitational attraction of the moon and sun and other astronomical bodies acting upon the rotating earth.

Tide, diurnal: See "Diurnal tide."

Tide, ebb: See "Ebb tide."

Tide, flood: See "Flood tide."

Tide, neap: See "Neap tide."

Tide, slack: See "Slack tide."

Tide, spring: See "Spring tide."

Topography: The configuration of a surface, including its relief and the positions of its streams, roads, buildings, etc.

Turning basin: An area provided for the maneuvering or turning of vessels.

221 Agreement: A term describing the requirements necessary to be contained in a Local Cooperation Agreement and Project Cooperation Agreement stemming from the requirements contained in Section 221 of the Flood Control Act of 1970 (Public Law 91-611), as amended. See "Project Cooperation Agreement."

Vessels: Towboats, barges, and other waterborne craft.

Virginia Water Protection (VWP) Permit: The Department of Environmental Quality administers the Federal Clean Water Act and enforces state laws to improve the quality of Virginia's streams, rivers, bays, and groundwater for aquatic life, human health, and other water uses. Specifically, Section 401 of the Clean Water Act is administered by the Department of Environmental Quality through the VWP permit program. Any project that requires Federal permits for the discharge of dredge material or fill in a waterway or wetland (Clean Water Act, Section 404), work or construction in a navigable waterway (Rivers and Harbors Act, Section 10), or a water withdrawal will be reviewed by the Department of Environmental Quality for issuance of a VWP permit. Without the VWP permit (formerly called the 401 Certification) a Federal permit will not be issued.

VPA 2010 Plan: A plan developed by the Virginia Port Authority for an integrated port-wide approach for the marine terminals located in the Hampton Roads area.

Water Resources Development Act (WRDA): A public law that is passed by Congress and signed by the President of the United States for the purpose of providing for the conservation and development of water and related resources, for authorizing the Secretary of the Army to construct various projects for improvements to rivers and harbors of the United States, and for other purposes.

Waterborne commerce: Commodities moved or transported by way of navigation channels.

Waterway: Any body of water wide enough and deep enough to accommodate the passage of water craft, particularly commercial vessels.

Wave: A ridge, deformation, or undulation of the surface of a liquid.

Wave direction: The direction from which a wave approaches.

Wave height: The vertical distance between a crest and the preceding trough.

Wavelength: The horizontal distance between similar points on two successive waves measured perpendicular to the crest.

Wharf: A structure built on the shore of a harbor, river, or canal, so that vessels may lie along side to receive and discharge cargo and passengers.

Whitecap: On the crest of a wave, the white froth caused by wind.

Wind chop: See “Chop.”

Windward: The direction from which the wind is blowing.

Workshop meeting: A meeting of stakeholders for receiving and giving information, consensus forming, negotiations, and summarizing.

(1) See also Appendix E, Table E-4, for glossary Internet sites.

## **APPENDIX B**

### **PUBLISHED CHARTS AND MAPS**

Table B-1. NATIONAL OCEAN SERVICE NAUTICAL CHARTS, THE PORT OF HAMPTON ROADS AND VICINITY

Title	NOS number	Scale
• Cape May to Cape Hatteras	12200	1:419,706
• Cape Henry to Pamlico Sound	12205	1:80,000
• Norfolk to Albemarle Sound via North Landing River or Great Dismal Swamp Canal	12206	1:40,000
• Cape Henry to Currituck Beach Light	12207	1:80,000
• Chesapeake Bay-Southern Part	12220	1:200,000
• Chesapeake Bay Entrance	12221	1:80,000
• Chesapeake Bay-Cape Charles to Norfolk Harbor	12222	1:40,000
• Hampton Roads	12245	1:20,000
• James River-Newport News to Jamestown Island	12248	1:40,000
• Norfolk Harbor and Elizabeth River	12253	1:20,000
• Cape Henry to Thimble Shoal Light	12254	1:20,000
• Chesapeake Bay-Thimble Shoal Channel	12256	1:20,000
• Cape Sable to Cape Hatteras	13003	1:1,200,000

Table B-2. U.S. GEOLOGICAL SURVEY MAPS, THE PORT OF HAMPTON ROADS  
AND VICINITY

7.5 Minute series (1:24,000 scale)

- Benns Church
- Bowers Hill
- Cape Henry
- Chesapeake Channel
- Chuckatuck
- Deep Creek
- East of Hampton
- Fentress
- Fishermans Island
- Hampton
- Kempsville
- Lake Drummond NW
- Little Creek
- Mulberry Island
- Newport News North
- Newport News South
- Norfolk North
- Norfolk South
- North Bay
- North Virginia Beach
- Pleasant Ridge
- Princess Anne
- Suffolk
- Virginia Beach

County (and independent city) map series (1:50,000 scale)

- Chesapeake (city)
- Hampton (city)
- Isle of Wight (county)
- Newport News (city)
- Norfolk (city)
- Portsmouth (city)
- Suffolk (city)
- Virginia Beach (city)

Table B-2. U.S. GEOLOGICAL SURVEY MAPS, THE PORT OF HAMPTON ROADS  
AND VICINITY  
(Cont'd)

30 X 60 Minute series (1:100,000 scale)

- Cheriton
- Norfolk
- Virginia Beach
- Williamsburg

1 X 2 Degree series (1:250,000 scale)

- Chincoteague
- Currituck Sound
- Norfolk
- Richmond

State map series

- 1:500,000 scale
- 1:1,000,000 scale

National atlas (1:2,000,000 scale)

- Middle Atlantic states (sheets 8 to 9)

# **APPENDIX C**

## **SHORELINE USE**



---

## TABLE OF CONTENTS

### APPENDIX C

---

<u>Item</u>	<u>Page</u>
GENERAL	C-1
SHORELINE USE BY TYPE	C-2
INDUSTRIAL SHORELINE USE BY STATUS	C-3
GENERAL	C-3
POTENTIAL PORT DEVELOPMENT SITES	C-3

#### LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
C-1	POTENTIAL PORT DEVELOPMENT SITES	C-4

#### LIST OF PLATES

<u>No.</u>	<u>Title</u>
C-1	SHORELINE USE MAP 1
C-2	SHORELINE USE MAP 2
C-3	SHORELINE USE MAP 3
C-4	INDUSTRIAL SHORELINE STATUS MAP 1
C-5	INDUSTRIAL SHORELINE STATUS MAP 2
C-6	INDUSTRIAL SHORELINE STATUS MAP 3

---

## **APPENDIX C**

### **SHORELINE USE**

---

#### **GENERAL**

Hampton Roads and its tributaries have had an important impact on the development of the study area. The types of existing development of the area vary from the open and extensive, such as woodlands, parklands, and wetlands to the more intensive urban, such as residential, commercial, and industrial activities; railroads; highways; and public lands. The one county and seven independent cities that comprise the study area have traditionally been responsible for most land-use planning. The local planning departments are the principal sources for detailed information regarding comprehensive land-use plans and related planning information. In addition, the Hampton Roads Maritime Association Annual contains recent information on shoreline use. In recent years, growing residential, commercial, and industrial needs within the study area and increasing demands for new facilities have created the need for a regional planning approach, and the Hampton Roads Planning District Commission has and continues to be instrumental in coordinating area-wide planning efforts.

This section of the appendix provides a general overview of land use immediately adjacent to the waterways that comprise the Hampton Roads area. The main Elizabeth River Channel, bordered by the Cities of Norfolk and Portsmouth, includes the world's largest naval base; coal, grain, container cargo, and general cargo facilities; and residential and recreational areas. Also, the Craney Island Dredged Material Area is located adjacent to the channel on the Portsmouth side and could be used for port expansion when it is filled to capacity. Shoreline use along the Eastern Branch consists primarily of shipbuilding and repair facilities and oil terminals. Some of these facilities are unused and/or underutilized. Along the Southern Branch of Elizabeth River are the

Norfolk Naval Shipyard; private shipyards and repair facilities; and oil, natural gas, grain, and bulk and liquid terminals. There is also some vacant and underutilized land located along the Southern Branch. Land along the Chesapeake Bay from Willoughby to Cape Henry, which includes Little Creek and the Lynnhaven Inlet, generally consists of naval installations, recreational boating facilities, residential development, and recreational beaches.

Along the City of Newport News waterfront, land use consists primarily of shipbuilding and repair, coal loading terminals, container and general cargo facilities, commercial moorings, fish landing/processing facilities, and fuel terminals. Land areas adjacent to the harbor in the City of Hampton are used primarily for recreational boating, oil and seafood terminals, and residential development.

### **SHORELINE USE BY TYPE**

Plates C-1 through C-3 identify lands adjacent to the water by their type of use. These maps are not meant to show the use each individual plot of land, but to reflect the predominant character of the various segments of shoreline. The types of shoreline use are defined as follows:

- Commercial: Development having retail and other service type businesses.
- Government/educational: Major military and government civilian installations and facilities, as well as educational institutions, on the waterway.
- Green area: Beach front or other areas undeveloped by design and reserved for use on this water and with no adjacent development.
- Industrial: Property currently being used for manufacturing, bulk storage, maritime support, etc.

- Residential: Development having single and multifamily dwellings for human habitation.

## **INDUSTRIAL SHORELINE USE BY STATUS**

### **GENERAL**

Plates C-4 through C-6 show the current status of land use for industrial shoreline properties adjacent to Hampton Roads. The types of land status are defined as follows:

- Vacant properties: Bare land having no buildings or other improvements. It may or may not have utilities.
- Unused/underutilized properties: Property not currently being used or not being used to meet its highest and best use.
- Industrial developed properties: Property currently being used for manufacturing, bulk storage, maritime support, etc., including major military installations.

### **POTENTIAL PORT DEVELOPMENT SITES**

The following table shows a list of some of the potential industrial shoreline development sites located within the Hampton Roads harbor area. The locations are shown on Plates C-4 through C-6 and are keyed to the alphabetical code listed in the table. More detailed information regarding these sites may be obtained from the Economic Development Departments of the respective cities in which the land parcels are located.

Table C-1. POTENTIAL PORT DEVELOPMENT SITES

Chesapeake

- A. Farmers Export site at 1213 Victory Boulevard
- B. Alcoa site at 1213 Victory Boulevard
- C. Norfolk Steel plant at 1500 Steel Street
- D. Vacant undeveloped property along the Southern Branch of the Elizabeth River
- E. Davis site at Dominion Boulevard North and Bainbridge Boulevard
- F. Higginson and Buchanan property at 5300 Bainbridge Boulevard
- G. Steuart Industrial Park/Smith Douglas site at Military Highway and Bainbridge Boulevard
- H. Mc Lean Contracting site at 100 Republic
- I. Elizabeth River Terminals, Incorporated at 4100 Buell Street
- J. Freeman Industrial Center at Freeman Avenue and I-464
- K. Gulf Oil site at 101 Ohio Street

Hampton

None at this time

Newport News

None at this time

Norfolk

- L. Jonathan Corporation property at Colley Avenue and Front Street
- M. NBC Line property located near Harbor Park--includes an old cold storage warehouse
- N. Norfolk Shipbuilding and Drydock Corporation Brambleton plant located next to the Campostella Bridge--includes vacant industrial buildings on the waterfront

Portsmouth

- O. Craney Island Dredged Material Area
- P. Cox property south of the Coast Guard station

Suffolk

- Q. Old General Electric plant located next to the Frederick Campus of Tidewater Community College
- R. Undeveloped beachfront on the east side of I-664

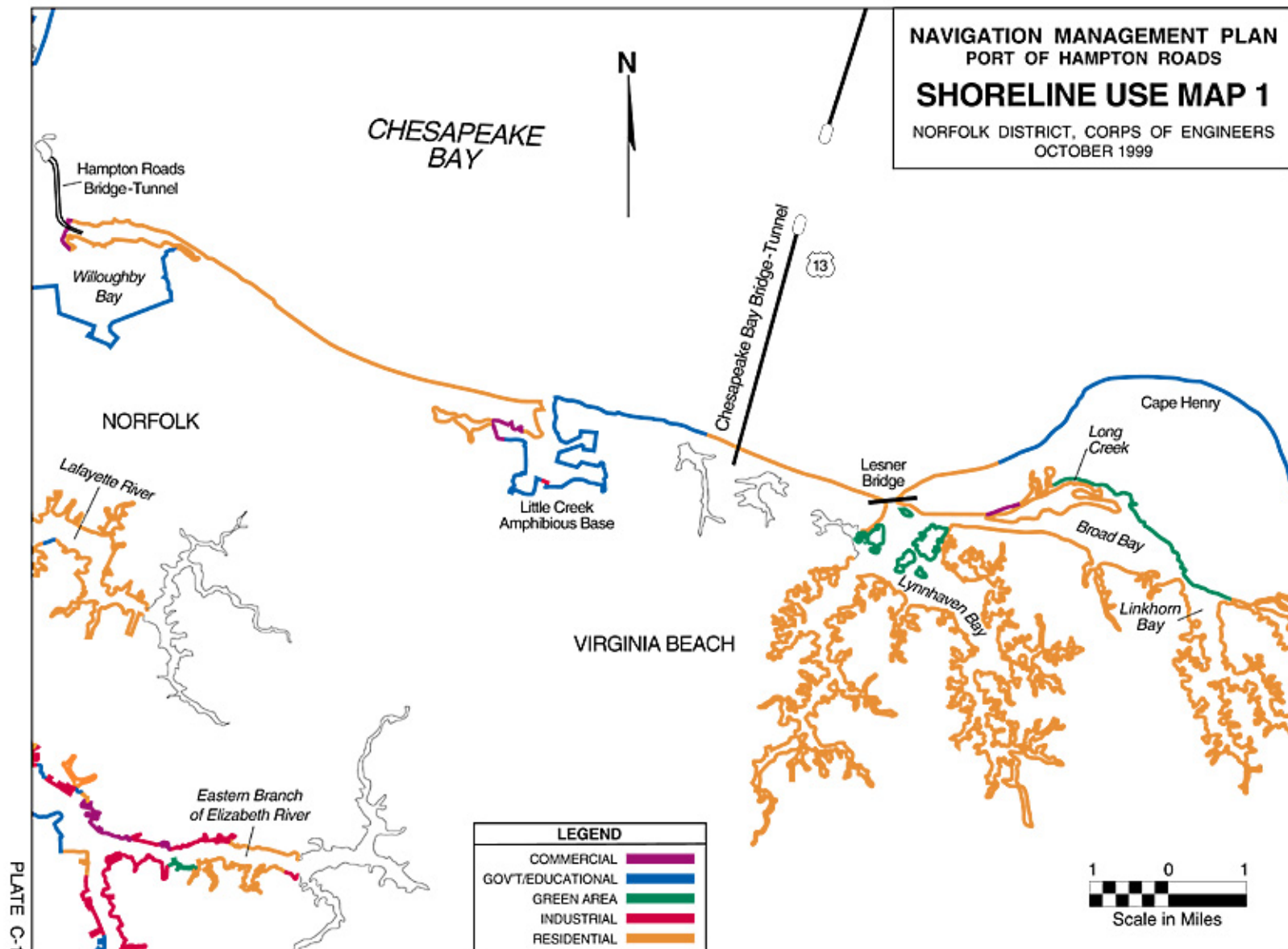
Virginia Beach

- S. Old Jonathan Corporation property near the Little Creek Naval Amphibious Base

NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS

**SHORELINE USE MAP 1**

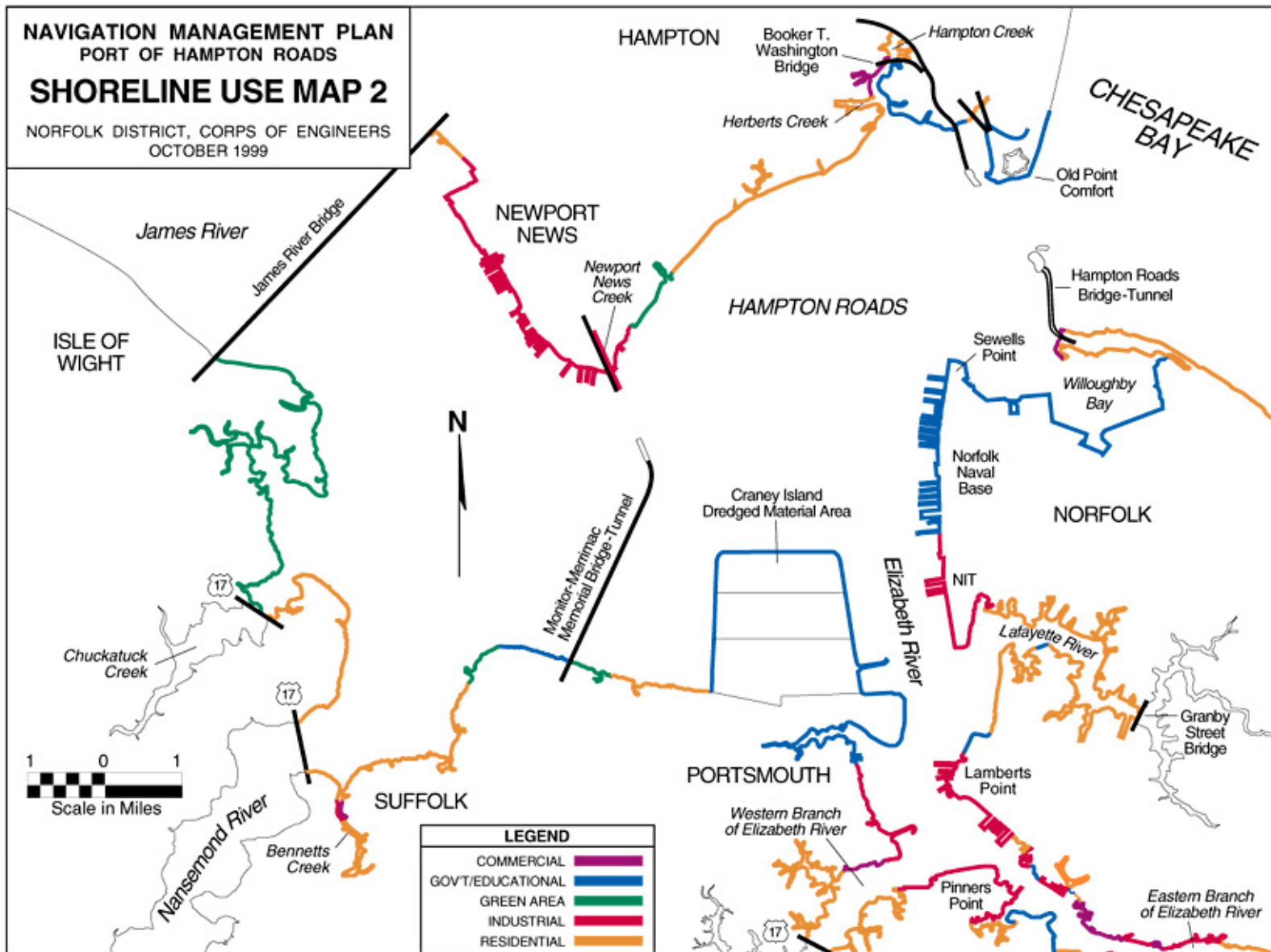
NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999

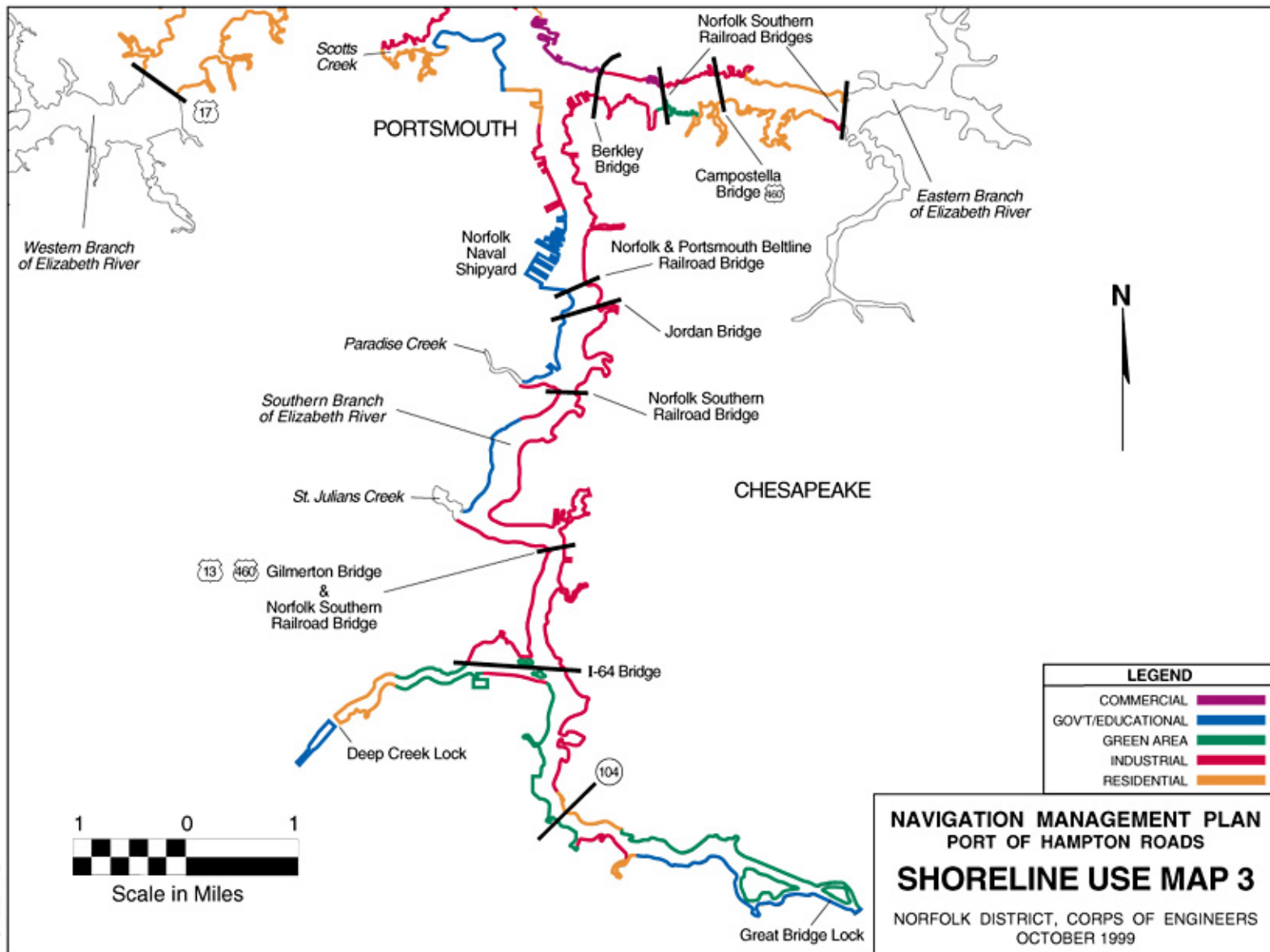


NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS

**SHORELINE USE MAP 2**

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999







NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS  
**INDUSTRIAL SHORELINE  
STATUS MAP 1**

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999

N

CHESAPEAKE  
BAY

Hampton Roads  
Bridge-Tunnel

Willoughby  
Bay

NORFOLK

Lafayette River

Little Creek  
Amphibious Base

Chesapeake Bay Bridge-Tunnel

13

Lesner  
Bridge

Long  
Creek

Cape Henry

Broad Bay

Linkhorn  
Bay

Lynnhaven Bay

VIRGINIA BEACH

Eastern Branch  
of Elizabeth River

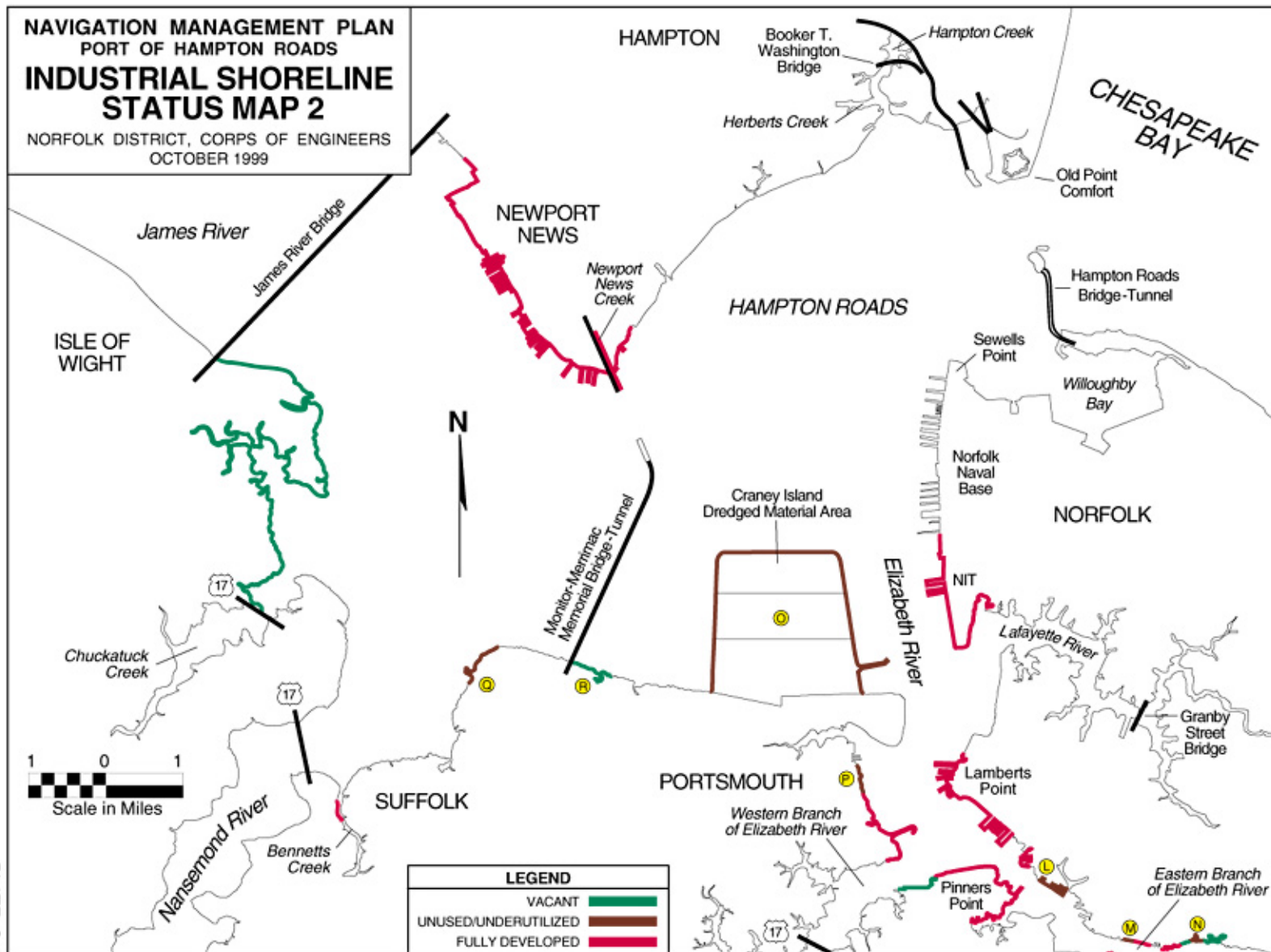
LEGEND	
VACANT	
UNUSED/UNDERUTILIZED	
FULLY DEVELOPED	

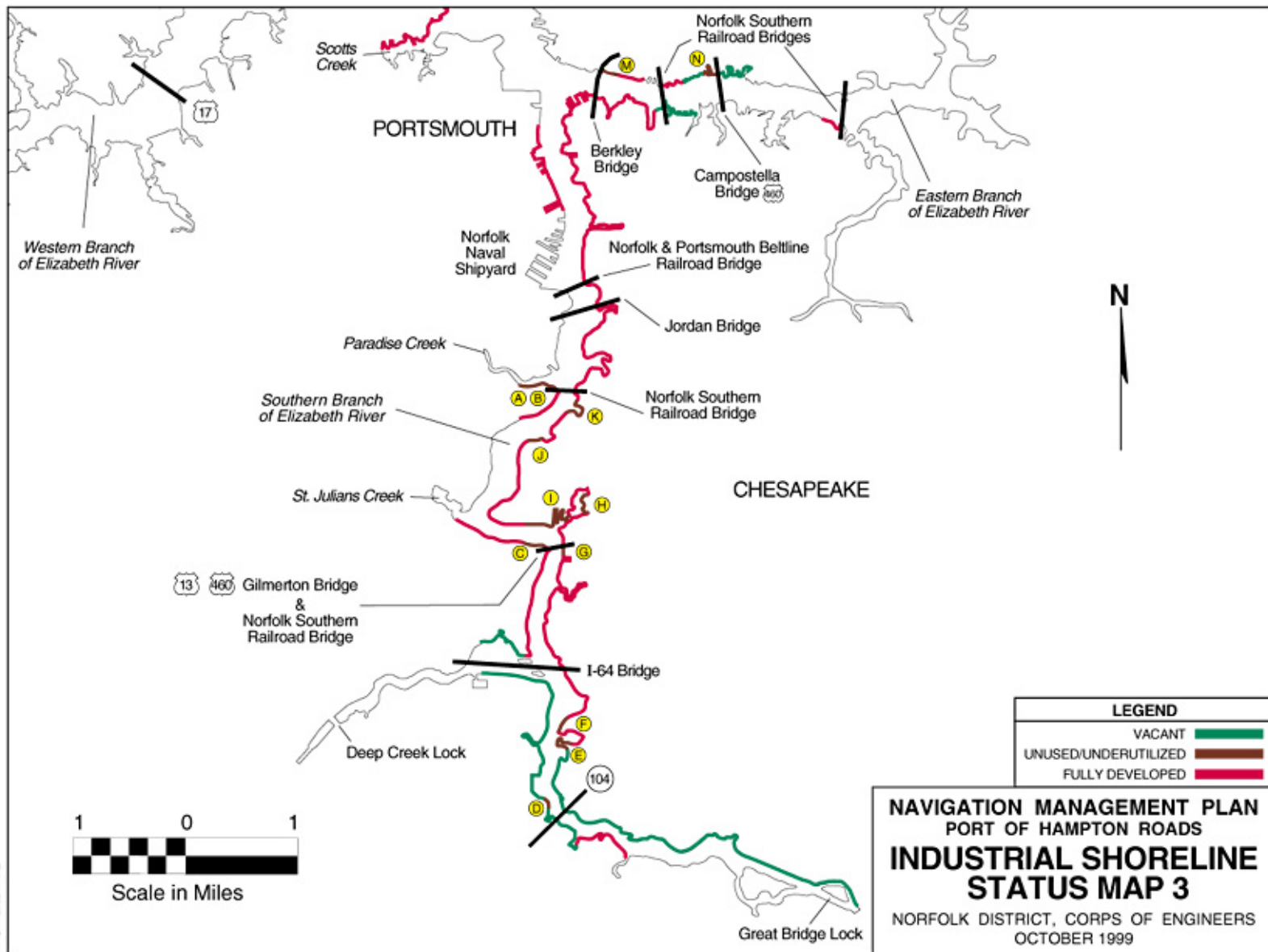
1 0 1  
  
Scale in Miles

PLATE C-4

**NAVIGATION MANAGEMENT PLAN  
PORT OF HAMPTON ROADS  
INDUSTRIAL SHORELINE  
STATUS MAP 2**

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999





## **APPENDIX D**

### **LAWS, REGULATIONS, AND PERMITTING INFORMATION**

---

## TABLE OF CONTENTS

### APPENDIX D

---

<u>Item</u>	<u>Page</u>
GENERAL	D-1
FEDERAL AND STATE LAWS AND REGULATIONS	D-1
FEDERAL	D-1
STATE	D-2
CORPS OF ENGINEERS REGULATORY PROGRAM	D-3
HISTORY	D-3
WHAT WORK REQUIRES A PERMIT?	D-3
WHO SHOULD OBTAIN A PERMIT?	D-4
WATERS OF THE UNITED STATES	D-4
NAVIGABLE WATERS	D-4
WETLANDS	D-4
TYPES OF PERMITS	D-5
VIRGINIA MARINE RESOURCES COMMISSION, HABITAT MANAGEMENT DIVISION	D-7
GENERAL	D-7
HABITAT MANAGEMENT DIVISION PERMITTING	D-10
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY	D-11
GENERAL	D-11

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
WHO MUST APPLY?	D-12
LEGAL AUTHORITY	D-12
TERM	D-13
FEES	D-13
TYPICAL REQUIREMENTS OF A PERMIT	D-13
APPLICATION PROCESS	D-13
ISSUED TO OWNERS TO DREDGE AND FILL, ETC., IN STATE WATERS	D-14
THE VIRGINIA DEQ CONCURRENCE WITH CORPS OF ENGINEERS ON NATIONWIDE PERMITS	D-14
THE VIRGINIA DEQ AND STATE WATER CONTROL BOARD DECISION TO WAIVE REQUIRING A PERMIT	D-14
LOCAL WETLANDS BOARD	D-15
CHESAPEAKE BAY PRESERVATION ACT	D-17
GENERAL	D-17
DEFINITIONS	D-21
CONTACT POINTS	D-24

---

## **APPENDIX D**

### **LAWS, REGULATIONS, AND PERMITTING INFORMATION**

---

#### **GENERAL**

The following is a listing of the Federal and state laws and regulations related to activities in the Port of Hampton Roads. Subsequent to this listing is a detailed discussion regarding some of the Federal, state, and local environmental regulatory agencies and related permitting programs.

#### **FEDERAL AND STATE LAWS AND REGULATIONS**

##### **FEDERAL**

- Title 14, United States Code, Coast Guard
- Title 15, United States Code, Commerce and Trade
- Title 19, United States Code, Customs and Duties
- Title 33, United States Code, Navigation and Navigable Waters
- Title 46, United States Code, Shipping
- Federal Water Pollution Control Act (Clean Water Act)--33 United States Code Sections 1251 to 1376
- Rivers and Harbors Act of 1899 (Protection of Navigable Waters and of Harbor and River Improvements Generally)--33 United States Code Sections 401 to 467e
- National Environmental Policy Act (NEPA)--42 United States Code Sections 4321 to 4347
- Fish and Wildlife Coordination Act--16 United States Code Sections 661 to 666c
- Oil Pollution Act of 1990--33 United States Code Sections 2701 to 2761

- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), amended by Superfund Amendments and Reauthorization Act of 1986 (SARA)--42 United States Code Sections 9601 to 9675
- Coastal Zone Management Act of 1972--16 United States Code Sections 1451 to 1464
- Marine Protection, Research and Sanctuaries Act of 1972 (Ocean Dumping Act)--33 United States Code Sections 1401 to 1445
- Magnuson-Stevens Fishery Conservation and Management Act--16 United States Code Sections 1801 to 1883
- Endangered Species Act--16 United States Code Sections 1531 to 1544
- Marine Mammal Protection Act--31 United States Code Sections 1361 to 1421
- Coastal Wetlands Planning, Protection and Restoration Act--16 United States Code Sections 3951 to 3956

## **STATE**

- Code of Virginia Title 28.2 Fisheries and Habitat of the Tidal Waters
  - Chapter 12 Submerged Lands, Sections 28.2-1200 to 28.2-1213
  - Chapter 13 Wetlands, Sections 28.2-1300 to 28.2-1320
  - Chapter 14 Coastal Primary Sand Dunes and Beaches, Sections 28.2-1400 to 28.2-1420
- Code of Virginia Title 62.1--Waters of the State, Ports and Harbors
- Virginia Administrative Code Title 9, Environment
  - Virginia Water Protection Permit (VWPP) Regulation--9 VAC 25-210-10 et seq.
  - Chesapeake Bay Preservation Area Designation and Management Regulations--9 VAC 10-20-10 et seq.
  - Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation--9 VAC 25-31-10 et seq.



## **CORPS OF ENGINEERS REGULATORY PROGRAM**

Water is one of our nation's most valuable resources. It is becoming increasingly important that we protect the quality of our inland waters and wetlands for the use and benefit of future generations. If you are planning work in a river, stream, or wetland, a Corps permit may be required. The program provides for the consideration of all concerns of the public--environmental, social, and economic--in the Corps decision-making process to either issue or deny permits. As part of its responsibility to protect water quality, the Corps of Engineers Section 404 permit program extends to many areas that were not regulated prior to the Clean Water Act. The purpose of the Section 404 program is to ensure that the physical, biological, and chemical quality of our nation's water is protected from irresponsible and unregulated discharges of dredged or fill material that could permanently alter or destroy these valuable resources.

### **HISTORY**

The Corps of Engineers has been involved in regulating certain activities in the nation's water since 1890. Until 1968, the primary thrust of the Corps regulatory program was the protection of navigation. As a result of several new laws and judicial decisions, the program evolved to one that considers the full public interest by balancing the favorable impacts against the detrimental impacts.

### **WHAT WORK REQUIRES A PERMIT?**

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or that affects the course, location, condition, or capacity of such waters. Typical activities requiring Section 10 permits are: (1) construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats, intake structures, and cable or pipeline crossings; and (2) dredging and excavation. Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are: (1) depositing of fill or dredged material in waters of the United States or adjacent wetlands; (2) site development fill for residential,

commercial, or recreational developments; (3) construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; and (4) placement of riprap and road fills.

### **WHO SHOULD OBTAIN A PERMIT?**

Any person, firm, or agency (including Federal, state, and local government agencies) planning to work in navigable waters of the United States, or dump or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps of Engineers. Permits, licenses, variances, or similar authorizations may also be required by other Federal, state, and local statutes.

### **WATERS OF THE UNITED STATES**

Waters of the United States include essentially all surface waters, such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands, and all impoundments of these waters. The landward regulatory limit for non-tidal waters (in the absence of wetlands) is the ordinary high water mark. The ordinary high water mark is the line on the shores established by the fluctuations of water and indicated by physical characteristics such as: (1) a clear natural line impressed on the bank, (2) shelving, (3) changes in the character of the soil, (4) destruction of terrestrial vegetation, (5) the presence of litter and debris; or (6) other appropriate means that consider the characteristics of the surrounding areas.

### **NAVIGABLE WATERS**

Navigable waters are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/or Section 404 permits are required for construction activities in these waters. A complete list is available in the Norfolk District office.

### **WETLANDS**

Wetlands are areas characterized by growth of wetland vegetation where the soil is saturated during a portion of the growing season or the surface is flooded during some

part of most years. Wetlands generally include swamps, marshes, bogs, and similar areas.

## **TYPES OF PERMITS**

### **Individual Permits**

Individual permits are issued following a full public interest review of an individual application for a Department of the Army permit. A public notice is distributed to all known interested persons. After evaluating all comments and information received, a final decision on the application is made. The permit decision is generally based on the outcome of a public interest-balancing process, where the benefits of the project are balanced against the detriments. A permit will be granted unless the proposal is found to be contrary to the public interest. Processing time usually takes 60 to 120 days unless a public hearing is required or an environmental impact statement must be prepared. To apply for an individual permit, an application form must be completed and submitted to the Virginia Marine Resources Commission. This application is available from all regulatory field offices.

### **Nationwide Permits**

A nationwide permit is a form of general permit which authorizes a category of activities throughout the nation. These permits are valid only if the conditions applicable to the permits are met. If the conditions cannot be met, a regional or individual permit will be required. Summaries of the nationwide permits are available. There are several nationwide permits that may be applicable, including:

- Nationwide 3: Repair, rehabilitation, or replacement of a structure or fill that was previously authorized and currently serviceable. The structure or fill must not be significantly changed.
- Nationwide 12: Utility lines placed across a waterway. Discharge of bedding and backfill material is permitted if bottom contours are not changed.

- Nationwide 18 and/or 19: Single projects of less than 10 cubic yards of fill. These permits allow up to 25 cubic yards of either fill or excavation provided that notification is given to the Corps prior to any work being undertaken.
- Nationwide 13: Bank stabilization projects less than 500 feet long containing less than an average of 1 cubic yard of material per running foot. The activity must be necessary for erosion protection and may not exceed the minimum amount needed for erosion protection. Fill is not to be placed in wetland areas or in a manner that impairs water flow. Materials free of waste metal products and unsightly debris must be used and the activity must be a single, complete project.
- Nationwide 14: Minor road crossing fills (temporary or permanent) that place less than 200 cubic yards of fill below the ordinary high water mark. The crossing must be bridged or culverted to prevent restriction of high flows. The fill placed in waters of the United States is limited to no more than one third of an acre.

### **Regional Permits**

Regional permits are issued by the District Engineer for a general category of activities when: (1) the activities are similar in nature and cause minimal environmental impact (both individually and cumulatively), and (2) the regional permit reduces duplication of regulatory control by state and Federal agencies. The Norfolk District has several regional permits that may be applicable, including:

- Regional Permit 15: Allows the maintenance dredging of existing ditches in navigable waters in order to maintain drainage from upland areas with notification to the Corps.

- Abbreviated Standard Permit 18: Allows for expedited review of projects determined to have minimal environmental consequence after submittal of a Joint Permit Application and proper notice procedures.
- Regional Permit 19: Allows for work such as utility lines, aerial transmission lines, maintenance dredging of previously authorized projects, or bulkhead and/or riprap with associated backfill, provided that a Joint Permit Application is submitted and proper authorization is received from the state and/or local permitting agencies. This regional permit is specifically acknowledged by the Corps.
- Regional Permit 40: Allows the removal of sediment and debris to prevent the loss of property or reduce flooding and/or erosion or maintenance dredging of serviceable impoundments, including stormwater management facilities, flood control structures, public lakes, and ponds in order to reestablish their original design contours or capacity. This permit requires notification to the Corps prior to any work and written verification that the project complies with the conditions of the subject permit.

## **THE VIRGINIA MARINE RESOURCES COMMISSION, HABITAT MANAGEMENT DIVISION**

### **GENERAL**

The Habitat Management Division handles a permit program that encompasses subaqueous habitat preservation and the protection and preservation of tidal wetlands and coastal primary sand dunes. There has been a noteworthy effort in recent years to achieve a streamlined shoreline permit process. The Joint Permit Application, introduced in 1978 to handle local/state and Federal requirements in one form, has enjoyed wide public acceptance.

Virginia is endowed with over 5,242 miles of tidal shoreline encompassing 2,300 square miles of water surface covering 1,472,000 acres of State owned bottomlands. These submerged lands, greater in area than the State of Delaware, harbor some 21,000 acres of Chesapeake Bay grasses, 251,000 acres of public oyster grounds, and 102,000 acres of oyster grounds under private lease. These lands are a public resource and a valuable habitat for shellfish, crabs, and finfish. Along the fringes of the myriad coves, creeks, great rivers, and bays of the Chesapeake estuary grow some 225,000 acres of vegetated tidal wetlands. These vegetated areas, particularly the salt marshes, constitute a vital spawning and nursery area and are an important element of the marine food webs for many economically valuable marine resources of Virginia.

Much of the charge for ensuring that these resources are responsibly used rests with the Habitat Management Division, operating under the mandates of Virginia's Wetlands and Subaqueous Laws. The Code of Virginia vests ownership of "all the beds of the bays, rivers, creeks, and shores of the sea in the Commonwealth to be used as a common by all the people of Virginia." Permits are required from the Virginia Marine Resources Commission to encroach upon or over state owned bottomlands. The Division receives and reviews these applications, solicits public comment on them, applies public interest factors in assessing them, and then prepares a recommendation to the Commissioner or Commission for a decision.

Division personnel weigh each individual application received to determine that they are in the public interest. This is accomplished ensuring that projects are necessary (there are no reasonable alternatives requiring less environmental disruption) and that adverse effects do not unreasonably interfere with other private and public rights to the use of waterways and bottomlands. Particular emphasis in this regard has been applied to the reduction of unnecessary filling of state bottom, the reduction of obstructions or hazards to navigation, and the prevention of structures encroaching into adjoining riparian areas. Use of these project evaluation criteria at an early stage often suggests project modifications, reduces conflicts between property owners, and, of course, protects inter-tidal habitats and navigation.

Not all conflicts, however, can be settled by Division engineers through consultation with affected parties. As a citizen's body and quasi-judicial board, the full Commission, meeting monthly, does a valuable service by providing not only a forum for public discussion and the airing of disputes, but a regulatory body, evaluating the issues and making decisions.

The evaluation of proposed shoreline projects requires the balanced considerations of often complex environmental, socio-political, and economic factors. Perhaps nowhere else have the Commission's decisions been more difficult in the last several years than in the area of marina development. The issue of new marinas, particularly in localities without local zoning, and proposed marina expansions, continue to conflict with shellfish growing areas. The continued emphasis on the Chesapeake Bay cleanup effort and anticipated population increases within Tidewater will continue to make this a very important issue.

The 1982 General Assembly enacted a revised Wetlands Law that brought non-vegetated shoreline between mean low and mean high water under state or local jurisdiction, as well as the vegetated shoreline brought under protection in 1972. New guidelines were developed to assure smooth implementation of the new program. Much of the workload increase can be attributed to this expanded jurisdiction.

The Habitat Management Division also helps localities in administering their wetlands program; and where no local program exists, processes wetlands applications in the same manner for presentation to the Commission.

The Engineering/Surveying Department is responsible for surveying and mapping subaqueous grounds for public and private shellfish cultivation, leasing private shellfish grounds, and maintaining oyster ground lease records. This includes the accounting for work performed, the annual rent accounting of the leased oyster ground, and the platting and composite mapping of these parcels and the adjacent waters. There are over

250,000 acres of public grounds and currently 102,000 acres of private grounds for which the Department is responsible. Requests for new leases and transfers of current leases also are processed and surveyed. In cases of disputed claims, the Department weighs all available information in making recommendations to the division head for presentation to the Commission.

## **HABITAT MANAGEMENT DIVISION PERMITTING**

The environmental permits issued by the Habitat Management Division are of three types: (1) subaqueous or bottomlands, (2) tidal wetlands, and (3) coastal primary sand dunes. The Division's authority and responsibilities emanate from Subtitle III of Title 28.2 of the Code of Virginia and specifically regulates physical encroachment into these valuable resource areas.

The permit process relies on a single Virginia joint local/state/Federal permit application. The review process, for which this application was originally designed, takes into account various local, state, and Federal statutes governing the disturbance or alteration of environmental resources. The Virginia Marine Resources Commission plays a central role as an information clearinghouse for all three levels of review. Applications receive independent, yet concurrent review, by local wetland boards, the Virginia Marine Resources Commission, the Virginia Department of Environmental Quality (Virginia DEQ), and the Corps of Engineers.

Joint Permit Applications are available in many local government Planning Departments and at the Virginia Marine Resources Commission's main office in downtown Newport News. The permit fee is \$25 (\$100 for projects over \$10,000); see Section 28.2-1206 of the Code of Virginia for a full description of permit fees and royalties. To receive an application by mail, please contact the Virginia Marine Resources Commission directly at (757) 247-2252.



## **VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**

This section discusses in detail the VWPP, Section 62.1-44.15:5. After the effective date of regulations pursuant to this section, issuance of a VWPP shall constitute the certification required under Section 401 of the Clean Water Act.

### **GENERAL**

The Virginia DEQ shall issue a VWPP for an activity requiring Section 401 certification if it has determined that the proposed activity is consistent with the provisions of the Clean Water Act and will protect in-stream beneficial uses. The preservation of in-stream flows for purposes of the protection of navigation; fish and wildlife resources and habitat; and recreation, cultural, and aesthetic values; and the maintenance of waste assimilation capacity is a beneficial use of Virginia's waters. Conditions contained in a VWPP may include, but are not limited to, the volume of water that may be withdrawn as a part of the permitted activity. Domestic and other existing beneficial uses shall be considered the highest priority uses. When a VWPP is conditioned upon compensatory mitigation for adverse impacts to wetlands, the applicant may be permitted to satisfy all or part of such mitigation requirements by the purchase of credits from any wetlands mitigation bank that has been approved and is operating in accordance with applicable Federal guidance for the establishment, use, and operation of mitigation banks, as long as: (1) the bank is in the same U.S. Geological Survey cataloging unit, as defined by the Hydrologic Unit Map of the United States (U.S. Geological Survey, 1980), or an adjacent cataloging unit within the same river watershed as the impacted site; (2) the bank is ecologically preferable to practicable on-site and off-site individual mitigation options, as defined by Federal wetland regulations; and (3) the banking instrument, if approved after July 1, 1996, has been approved by a process that included public review and comment.

Prior to the issuance of a VWPP, the Virginia DEQ shall consult with, and give full consideration to the written recommendations of, the following agencies: (1) the Department of Game and Inland Fisheries, (2) the Department of Conservation and

Recreation, (3) the Virginia Marine Resources Commission, (4) the Department of Health, (5) the Department of Agriculture and Consumer Services, and (5) any other interested and affected agencies. Such consultation shall include the need for balancing in-stream uses with off-stream uses. Agencies may submit written comments on proposed permits within 45 days after notification by the Virginia DEQ. The Virginia DEQ shall assume that if written comments are not submitted by an agency within this time period, the agency has no comments on the proposed permit.

No VWPP shall be required for any water withdrawal in existence on July 1, 1989; however, a permit shall be required if a new Section 401 certification is required to increase a withdrawal.

No VWPP shall be required for any water withdrawal not in existence on July 1, 1989, if the person proposing to make the withdrawal has received a Section 401 certification before January 1, 1989, with respect to installation of any necessary withdrawal structures to make such withdrawal; however, a permit shall be required before any such withdrawal is increased beyond the amount authorized by the certification.

### **WHO MUST APPLY?**

Any project that requires Federal permits for discharge of dredged material or fill in a waterway or wetland (Clean Water Act, Section 404), work or construction in a navigable waterway (Rivers and Harbors Act, Section 10), or a water withdrawal will be reviewed by the Virginia DEQ for issuance of a VWPP. Without the VWPP (formerly called the 401 Certification), the Federal permits will not be issued.

### **LEGAL AUTHORITY**

- Federal Clean Water Act, Section 401
- Code of Virginia, Section 62.1-44.2 et. seq.

- Code of Virginia, Section 62.1-44.15:5
- Virginia Administrative Code, 9 VAC 25-210-10 et seq.

## **TERM**

The maximum term is up to 10 years.

## **FEES**

- Individual permit: \$800 to \$3,000, depending on the type of permit
- General permit: \$200
- Waiver: \$400

## **TYPICAL REQUIREMENTS OF A PERMIT**

- Alteration of the design or scale of the proposal.
- Requirement to employ specific construction practices.
- Limitations on disturbances during certain times of the year.

## **APPLICATION PROCESS**

- Contact the Virginia Marine Resources Commission to obtain a Joint Permit Application.
- The Virginia Marine Resources Commission sends copies of each application to the Virginia DEQ, the local wetlands board when applicable, and the Corps of Engineers, which decide separately whether they need to issue a permit for the proposal. Each agency responds separately to the applicant.

- The Virginia DEQ may consult with other state and Federal agencies, and meets frequently with the Virginia Marine Resources Commission and the Corps of Engineers to discuss the applications. Time frames for processing of applications provide more information.
- Federal permits cannot be issued without the VWPP/401 Certification.

#### **ISSUED TO OWNERS TO DREDGE AND FILL, ETC., IN STATE WATERS**

- Completeness review: 14 days
- Processing of complete application: 120 days
- Public comment: 90 days

#### **THE VIRGINIA DEQ CONCURRENCE WITH CORPS OF ENGINEERS ON NATIONWIDE PERMITS**

- Completeness review: 14 days
- Processing of complete application: 30 days
- Public comment: 90 days

#### **THE VIRGINIA DEQ AND STATE WATER CONTROL BOARD DECISION TO WAIVE REQUIRING A PERMIT**

- Completeness review: 7 days
- Processing of complete application: 14 days
- Public comment: 90 days

## **LOCAL WETLANDS BOARD**

Every county, city, or town bordering the Hampton Roads harbor has enacted a wetlands zoning ordinance creating a wetlands board, consisting of five or seven residents of that jurisdiction appointed by the local governing body. The term of all board members shall be five years. The chairman of the board shall notify the local governing body at least 30 days prior to the expiration of any member's term and shall promptly notify the local governing body if any vacancy occurs. Members may serve successive terms. A member whose term expires shall continue to serve until his successor is appointed and qualified. Members of the board shall hold no public office in the county or city other than membership on the local planning or zoning commission, the local erosion commission, or the local board of zoning appeals or as director of a soil and water conservation board. When members of these local commissions or boards are appointed to a local wetlands board, their terms of appointment shall be coterminous with their membership on those boards or commissions.

The board shall annually elect from its membership a chairman and such other officers as it deems necessary for terms of one year. For the conduct of any hearing and the taking of any action, a quorum shall be not less than three members of a five-member board nor less than four members of a seven-member board. The board may make, alter, and rescind rules and forms for its procedures, provided they are consistent with state law and local ordinances. The board shall keep a full public record of its proceedings and shall submit a report of its activities to the local governing body at least once each year. The board shall forward a copy of each report to the Virginia Marine Resources Commission.

Upon notification by any county, city, or town that it has adopted the wetlands zoning ordinance, the Virginia Marine Resources Commission shall immediately forward to that jurisdiction's wetlands board any pending permit application over which that board would have had jurisdiction if the ordinance had been in effect at the time the application was filed.

The Virginia Marine Resources Commission shall process permit applications in accordance with the provisions of the wetlands zoning ordinance, and the Commissioner, or his authorized representative, shall sign such permit; however, the Commission may designate one or more hearing officers who may, in lieu of the Commission, conduct public hearings as required under Section 28.2-1302, and thereafter report their findings and recommendations to the Commission.

Any county, city, or town may adopt the following ordinance, which, after October 1, 1992, shall serve as the only wetlands zoning ordinance under which any wetlands board is authorized to operate. Any county, city, or town that has adopted the ordinance prior to October 1, 1992, shall amend the ordinance to read as follows, "The governing body of ..., acting pursuant to Chapter 13 (Section 28.2-1300 et seq.) of Title 28.2 of the Code of Virginia, adopts this ordinance regulating the use and development of wetlands."

The Commissioner shall review all decisions of wetlands boards and request the Virginia Marine Resources Commission to review a decision only when he believes the board failed to fulfill its responsibilities under the wetlands zoning ordinance. The Commission shall review a decision of a wetlands board when any of the following events occur:

- An appeal is taken from the decision by the applicant or the county, city, or town where the wetlands are located.
- The Commissioner requests the review. In order to make the request, the Commissioner shall notify the board; applicant; and the county, city, or town where the wetlands are located within 10 days of receiving notice of the board's decision.
- Twenty-five or more freeholders of property within the county, city, or town in which the proposed project is located sign and submit a petition to the

Commission requesting the review. The petition shall indicate those specific instances where the petitioners allege that the board failed to fulfill its responsibilities under the wetlands zoning ordinance.

All requests for review or appeal shall be made within 10 days of the date of the board's decision. The Commission shall hear and decide the review or appeal within 45 days of receiving the request for review or notice of appeal. A continuance may be granted by the Commission on a motion of the applicant; the freeholders; or the county, city, or town where the wetlands are located.

## **CHESAPEAKE BAY PRESERVATION ACT**

### **GENERAL**

The Virginia General Assembly enacted the Chesapeake Bay Preservation Act (CBPA) in 1988. The Act is a critical element of Virginia's multifaceted response to the Chesapeake Bay Agreement. The CBPA established a cooperative program between state and local government aimed at reducing nonpoint source pollution. The CBPA Program is designed to improve water quality in the Chesapeake Bay and its tributaries by requiring wise resource management practices in the use and development of environmentally sensitive land features. At the heart of the CBPA is the idea that land can be used and developed in ways that minimize impact on water quality.

The protection of the public interest in the Chesapeake Bay, its tributaries, and other state waters and the promotion of the general welfare of the people of the Commonwealth require that: (1) the counties, cities, and towns of Tidewater Virginia incorporate general water quality protection measures into their comprehensive plans, zoning ordinances, and subdivision ordinances; (2) the counties, cities, and towns of Tidewater Virginia establish programs, in accordance with criteria established by the Commonwealth, that define and protect certain lands, hereinafter called Chesapeake Bay Preservation Areas, which if improperly developed may result in substantial damage to the water quality of the Chesapeake Bay and its tributaries; (3) the Commonwealth makes

its resources available to local governing bodies by providing financial and technical assistance, policy guidance, and oversight when requested or otherwise required to carry out and enforce the provisions of the CBPA; and (4) all agencies of the Commonwealth exercise their delegated authority in a manner consistent with water quality protection provisions of local comprehensive plans, zoning ordinances, and subdivision ordinances when it has been determined that they comply with the provisions of the CBPA. Local governments have the initiative for planning and for implementing the provisions of the CBPA, and the Commonwealth shall act primarily in a supportive role by providing oversight for local governmental programs, by establishing criteria, and by providing those resources necessary to carry out and enforce the provisions of the CBPA (1988, cc. 608, 891).

The CBPA established the Chesapeake Bay Local Assistance Board. The Board consists of nine Tidewater Virginia residents appointed by the Governor, subject to confirmation by the General Assembly. The Board contains at least one individual from each Planning District in which there is located one or more Tidewater Virginia localities. Members of the Board are representative of, but not limited to, citizens with an interest in and experience with local government, business, agriculture, forestry, the protection of water quality, and the use and development of land. The Board meets at least four times a year, and other meetings may be held at any time or place determined by the Board.

The Board is responsible for carrying out the purposes and provisions of the CBPA and is authorized to:

- Provide land use and development and water quality protection information and assistance to the various levels of local, regional, and state government within the Commonwealth.
- Consult, advise, and coordinate with the Governor, the Secretary of Natural Resources, the General Assembly, other state agencies, regional agencies, local governments, and Federal agencies.



- Provide financial and technical assistance and advice to local governments and to regional and state agencies concerning aspects of land use and development and water quality protection.
- Promulgate regulations pursuant to the Administrative Process Act (Section 9-6.14:1 et seq.).
- Develop, promulgate, and keep current the criteria required by Section 10.1-2107.
- Provide technical assistance and advice or other aid for the development, adoption, and implementation of local comprehensive plans, zoning ordinances, subdivision ordinances, and other land use and development and water quality protection measures utilizing criteria established by the Board.
- Develop procedures for use by local governments to designate Chesapeake Bay Preservation Areas in accordance with the criteria developed pursuant to Section 10.1-2107.
- Ensure that local government comprehensive plans, zoning ordinances, and subdivision ordinances are in accordance with the provisions of the CBPA. Determination of compliance shall be in accordance with the provisions of the Administrative Process Act (Section 9-6.14:1 et seq.).
- Make application for Federal funds that may become available under Federal acts and to transmit such funds when applicable to any appropriate person.
- Take administrative and legal actions to ensure compliance by counties, cities, and towns with the provisions of the CBPA.

- Perform such other duties and responsibilities related to the use and development of land and the protection of water quality as the Secretary of Natural Resources may assign.
- Enter into contracts necessary and convenient to carry out the provisions of the CBPA (1988, cc. 608, 891).

In order to implement the provisions of the CBPA and to assist counties, cities, and towns in regulating the use and development of land and in protecting the quality of state waters, the Chesapeake Bay Local Assistance Board promulgates regulations that establish criteria for use by local governments to determine the ecological and geographic extent of Chesapeake Bay Preservation Areas. The Board also promulgates regulations that establish criteria for use by local governments in granting, denying, or modifying requests to rezone, subdivide, or use and develop land in these areas.

In developing and amending the criteria, the Chesapeake Bay Local Assistance Board shall consider all factors relevant to the protection of water quality from significant degradation as a result of the use and development of land. The criteria shall incorporate measures such as performance standards, best management practices, and various planning and zoning concepts to protect the quality of state waters, while allowing use and development of land consistent with the provisions of the CBPA. The criteria adopted by the Board, operating in conjunction with other state water quality programs, shall encourage and promote: (1) the protection of existing high quality state waters and restoration of all other state waters to a condition or quality that will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them; (2) the safeguarding the clean waters of the Commonwealth from pollution; (3) the prevention of any increase in pollution; (4) the reduction of existing pollution; and (5) the promotion of water resource conservation in order to provide for the health, safety, and welfare of the present and future citizens of the Commonwealth.

Counties, cities, and towns are authorized to exercise their police and zoning powers to protect the quality of state waters consistent with the provisions of the CBPA. Counties, cities, and towns in Tidewater Virginia shall use the criteria developed by the Chesapeake Bay Local Assistance Board to determine the extent of the CBPA within their jurisdictions. Every county, city, and town in Tidewater Virginia shall accomplish designation of Chesapeake Bay Preservation Areas. Counties, cities, and towns in Tidewater Virginia shall incorporate protection of the quality of state waters into each locality's comprehensive plan. All counties, cities, and towns in Tidewater Virginia shall have zoning ordinances that incorporate measures to protect the quality of state waters in the Chesapeake Bay Preservation Areas. Zoning in Chesapeake Bay Preservation Areas shall comply with all criteria set forth in or established pursuant to Section 10.1-2107. Counties, cities, and towns in Tidewater Virginia shall incorporate protection of the quality of state waters in Chesapeake Bay Preservation Areas into their subdivision ordinances. Counties, cities, and towns in Tidewater Virginia shall ensure that all subdivisions developed pursuant to their subdivision ordinances comply with all criteria developed by the Board.

## **DEFINITIONS**

### **Resource Protection Areas**

Resource Protection Areas consist of sensitive lands at or near the shoreline that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts that may cause significant degradation to the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances in runoff entering the Chesapeake Bay and its tributaries, and minimize the adverse effects. The Resource Protection Areas include:

- Tidal wetlands;
- Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or tributary streams;
- Tidal shores;
- Such other lands under the provisions of subsection A of Section 3.2 of the CBPA necessary to protect the quality of state waters; and
- A buffer area not less than 100 feet in width located adjacent to and landward of the components listed in the subdivisions above, and along both sides of any tributary stream. The full buffer area shall be designated as the landward component of the Resource Protection Area notwithstanding the presence of permitted uses or equivalent measures. Designation of this area shall not be subject to reduction unless based on reliable site-specific information as provided in subsection B of Section 9 VAC 10-20-110, and subsections C and E of Section 9 VAC 10-20-220.

### **Resource Management Areas**

Resource Management Areas include land types that, if improperly used or developed, have a potential for causing significant water quality degradation or for diminishing the functional value of the Resource Protection Area. A Resource Management Area shall be provided contiguous to the entire inland boundary of the Resource Protection Area. Resource Management Areas encompass a land area large enough to provide significant water quality protection. The following land categories shall be considered for inclusion in the Resource Management Areas:

- Floodplains;
- Highly erodible soils, including steep slopes;

- Highly permeable soils;
- Nontidal wetlands not included in the Resource Protection Area; and
- Such other lands under the provisions of subsection A of Section 9 VAC 10-20-90 of this part necessary to protect the quality of state waters.

### **Intensely Developed Areas**

Local governments may designate Intensely Developed Areas as an overlay of Chesapeake Bay Preservation Areas within their jurisdictions. Intensely Developed Areas serve as redevelopment areas in which development is concentrated as of the local program adoption date. Areas so designated shall comply with the performance criteria for redevelopment. Local governments exercising this option shall examine the pattern of residential, commercial, industrial, and institutional development within Chesapeake Bay Preservation Areas. The following categories will be considered for inclusion as an Intensely Developed Area:

- Development has severely altered the natural state of the area such that it has more than 50 percent impervious surface.
- Public sewer and water is constructed and currently serves the area by the effective date. This condition does not include areas planned for public sewer and water.
- Housing density is equal to or greater than 4 dwelling units per acre.

## CONTACT POINTS

- **Chesapeake, City of**  
Department of Planning  
Post Office Box 15225  
Chesapeake, Virginia 23328  
(757) 547-6167  
Fax: (757) 436-8356
- **Hampton, City of**  
Department of Planning  
22 Lincoln Street  
Hampton, Virginia 23669  
(757) 727-6140  
Fax: (757) 727-6895
- **Newport News, City of**  
Department of Planning  
2400 Washington Avenue  
Newport News, Virginia 23607  
(757) 926-8761  
Fax: (757) 926-3639
- **Norfolk, City of**  
403 City Hall Building  
Norfolk, Virginia 23501  
(757) 664-4369  
Fax: (757) 664-4370

- **Portsmouth, City of**

City Hall

801 Crawford Street

Portsmouth, Virginia 23704

(757) 393-8836

Fax: (757) 393-5230

- **Suffolk, City of**

Department of Community Development

Post Office Box 1858

Suffolk, Virginia 23434

(757) 934-3111 or 925-6466

Fax: (757) 539-7693

- **Virginia Beach, City of**

Environmental Management Center

Operations Building, Room 164

Municipal Center

Virginia Beach, Virginia 23456

(757) 426-5790

Fax: (757) 426-5667

Internet address: <http://www.virginia-beach.va.us/cityhall/planning/emchome.html>

## **APPENDIX E**

### **HISTORICAL RECORDS, DATA SOURCES, AND OTHER REFERENCE MATERIAL**



---

## TABLE OF CONTENTS

### APPENDIX E

---

<u>Item</u>	<u>Page</u>
GENERAL	E-1
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	E-2
U.S. ARMY CORPS OF ENGINEERS	E-10
U.S. MARITIME ADMINISTRATION	E-54
U.S. NAVY	E-60
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY	E-72
VIRGINIA DEPARTMENT OF HISTORIC RESOURCES	E-80
VIRGINIA INSTITUTE OF MARINE SCIENCE	E-82
VIRGINIA MARINE RESOURCES COMMISSION	E-94
HAMPTON ROADS PLANNING DISTRICT COMMISSION	E-98
CITY OF NORFOLK	E-103

### LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
E-1	CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY	E-15
E-2	SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY	E-20

LIST OF TABLES  
(Cont'd)

<u>No.</u>	<u>Title</u>	<u>Page</u>
E-3	DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY	E-26
E-4	INTERNET SITES OF INTEREST, THE PORT OF HAMPTON ROADS AND VICINITY	E-104

---

## **APPENDIX E**

### **HISTORICAL RECORDS, DATA SOURCES, AND OTHER REFERENCE MATERIAL**

---

#### **GENERAL**

This appendix contains a more comprehensive description of the relevant port-related resource material identified in Table I-6 of the Plan. It also contains other reference material that may prove useful to the reader.

Several agencies provided pertinent information for Table I-6, relative to historical records and data sources within their control. This information will permit a better understanding of the content and applicability of the resource material and facilitate a more accurate determination of the need to obtain further details. The following files are presented by agency in the same order as Table I-6. Subsequent to the listing of these files, will be a listing of Internet sites of interest in the Port of Hampton Roads and vicinity.

**NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION**

**Organization:** National Oceanic and Atmospheric Administration  
National Ocean Service  
Office of Coast Survey  
Hydrographic Surveys Division  
Atlantic Hydrographic Branch

**Location:** 439 West York Street  
Norfolk, VA 23510

**Contact:** LCDR Andrew L. Beaver, NOAA

**Phone:** (757) 441-6746

**Fax:** (757) 441-6601

**File Name:** Hydrographic Data in the Marine Environment

**Description:**

The Atlantic Hydrographic Branch coordinates the acquisition and processing of precisely located geographic data in the marine environment. Hydrographic surveys are conducted to determine the configuration of the bottoms of water bodies, especially as it pertains to navigation. This includes the detection, location, and identification of wrecks and obstructions (AWOIS) primarily through the use of side scan sonar and multibeam sonar technology. Other features important to marine navigation such as landmarks and aids to navigation are also accurately positioned. This information is critically important to the production of nautical charts and is also useful to the fishing industry and to coastal zone managers.

**Assets:**

The NOAA has two hydrographic survey vessels based out of Norfolk. The NOAA Ship "Rude" is a 90-foot vessel that utilizes multibeam sonar. The "Whiting" is a 163-foot vessel that also has multibeam sonar and carries 29-foot launches. All vessels are equipped with side scan sonar. In addition, the Atlantic Hydrographic Branch has one trailerable and one non-trailerable launch equipped with side scan and single beam echosounders at its disposal to cover the 24-hour side scan sonar capability.

**Other Products and Services:**

- Nautical charts of the Hampton Roads area
- Nautical charts in a digital raster format
- Prior hydrographic surveys, both paper and digital

**Organization:** National Oceanic and Atmospheric Administration  
National Ocean Service  
Office of Coast Survey  
Ocean Products and Services Division  
Field Operations Branch

**Location:** 808 Principal Court  
Chesapeake, VA 23320

**Contact:** Jim Dixon

**Phone:** (757) 436-0200

**Fax:** (757) 436-9292

**File Name:** Oceanographic Observing Systems

**Description:**

The NOAA's Field Operations Branch, located in Chesapeake, is responsible for operating and providing maintenance and logistic support for all oceanographic and Great Lakes observing systems required by the Oceanographic Products and Services Division (OPSD). The Branch ensures the continuous 24-hour operation of navigation and other real-time observing systems needed to support the protection of life and property. The Branch also supports the Requirements and Engineering Branch and the Information Systems Branch to test and evaluate new observing systems and software modules, developed by these Branches and other components of the National Ocean Service, to support the OPSD and the Coast Survey mission objectives. Branch activities include, but are not limited to, the following: (1) installation, documentation, operation, and maintenance of measurement systems, such as the National Water Level Observation Network and the Physical Oceanographic Real-Time System (PORTS); (2) field reconnaissance and inspections of existing and/or potential new measurement sites such as those for property permissions and leases; (3) establishment, leveling, documentation, and inspection of National Ocean Service benchmarks; (4) field support for Coast Survey and the OPSD, cooperative, and/or reimbursable projects; (5) contract execution and administration, such as statement-of-work preparation and Contracting

Officer's Technical Representative duties, to provide for contract maintenance support; (6) and provision of training in the installation, operation, and maintenance of the OPSD observing equipment, including training required to maintain the OPSD "partnership" relationships.

**Operational Tide Gauges in the Hampton Roads Area:**

- |                                |                      |
|--------------------------------|----------------------|
| • Gloucester Point, York River | 37°14.8'N--76°30.0'W |
| • Sewells Point, Hampton Roads | 36°56.8'N--76°19.8'W |
| • Chesapeake Bay Bridge Tunnel | 36°58.0'N--76°06.8'W |



**Organization:** National Oceanic and Atmospheric Administration  
National Ocean Service  
National Geodetic Survey  
Field Operations Branch

**Location:** 439 West York Street  
Norfolk, VA 23510

**Contact:** Joe Lindsay

**Phone:** (757) 441-3603

**Fax:** (757) 441-6745

**File Name:** National Spatial Reference System

**Description:**

The National Geodetic Survey develops and maintains the National Spatial Reference System (NSRS) using advanced geodetic, photogrammetric, and remote sensing techniques. The NSRS is a consistent national coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the nation, as well as how these values change with time. This information is essential for ensuring the reliability of transportation, communication, and defense systems; boundary and property surveys; land record systems; mapping and charting; public utilities; coastal zone management; natural resource mapping; and a multitude of scientific and engineering applications. The National Geodetic Survey conducts the coastal mapping program, including surveying the nation's coastline and providing precise positions of the shoreline and other features that are used to construct navigational charts. The National Geodetic Survey is responsible for the photogrammetric mapping of all of the coastal regions of the United States and its possessions, and of the Great Lakes and their connecting waterways. The Field Operations Branch, located at the Atlantic Marine Center in Norfolk, conducts geodetic surveys to support shoreline mapping, nautical and aeronautical charting, and hydrography. Many of these surveys provide information that is incorporated into the National Airspace System in accordance with specifications of the Federal Aviation Administration. The Branch coordinates survey activities with other Federal, state, and

local governments having interests in particular projects. The Branch supports the NOAA's ship-based personnel by providing training in geodetic survey techniques and sometimes through performance of the surveys themselves. The Branch, through its survey units, performs control surveys, crustal motion surveys, airport obstruction surveys, navigational aid surveys, tidal datum surveys, and special purpose surveys. These functions involve the full scope of survey procedures, including global positioning system observations and differential measurements. These survey units acquire data and perform computations, data analyses, quality control, and survey adjustments using the method of least squares, before releasing the data to headquarters.

**Products:**

- Horizontal and vertical control information
- Aerial photography

**Organization:** National Oceanic and Atmospheric Administration  
National Ocean Service  
Office of Ocean Resources Conservation and Assessment  
Hazardous Material Response and Assessment Division

**Location:** USCG Reserve Training Center  
Yorktown, VA 23690

**Contact:** Gary Ott

**Phone:** (757) 898-2234

**Fax:** (757) 898-2394

**File Name:** Scientific Support During Spills

**Description:**

The Scientific Support Coordination Branch provides critical scientific support to the Federal On-Scene Coordinator during spills of oil and hazardous materials, in order to reduce the risks to coastal habitats and resources. Scientific Support Coordinators use oil spill trajectory estimates, chemical hazards analyses, and assessments of the sensitivity of resources to help the Federal On-Scene Coordinator make timely operations decisions. They also provide guidance, experience, and resources to develop spill preparedness plans that help identify the course of action that provides the greatest environmental benefit. The Branch Scientific Support Coordinators and technical advisors support the Coast Guard at marine spills of oil and hazardous materials by providing critical information on spill trajectory, chemical hazard analyses, and assessments of the sensitivity of coastal and estuarine habitats. The staff apply scientific principles to pre-event planning, spill prevention, on-scene response, operational forecasting, impact mitigation, and environmental assessment of effects of releases of oil and other hazardous substances in the marine environment. The Branch conducts research and monitoring projects to investigate the physical, biological, and chemical processes relevant to pollution incidents; the environmental consequences of mitigation techniques; spill countermeasures; and remedial activities at spills and waste sites. Current research includes investigating the long-term environmental effects of cleanup technologies used

at the "Exxon Valdez" spill. Scientists have also published guidelines on selecting appropriate mechanical equipment to counter the effects of oil spills, as well as guidelines for responding to spills in specific coastal environments, including freshwater, tropical, Arctic, and temperate climates.

# **U.S. ARMY CORPS OF ENGINEERS**

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
District Library

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Lane Killam

**Phone:** (757) 441-7562

**Fax:** (757) 441-7719

**File Name:** Rivers and Harbors Congressional Documents

**Description:**

Rivers and Harbors Congressional Documents are publications that generally describe acts that define, expand, and change Corps of Engineers programs, authorities, and responsibilities regarding the management of the nation's water resources. The documents began as a series of omnibus bills in 1875. Then in 1960, the omnibus bills were combined in a series of Rivers and Harbors Flood Control Acts, the last of which was in 1970. Since 1974, the omnibus bills have been called Water Resources Development Acts. The library is open during business hours and is located on the first floor of the Norfolk District's main office, the Waterfield Building.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
District Library

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Lane Killam

**Phone:** (757) 441-7562

**Fax:** (757) 441-7719

**File Name:** Annual Reports of the Corps of Engineers

**Description:**

Annual Reports of the Corps of Engineers are documents from 1867 to the present detailing the Corps of Engineers civil works projects, many of which are located within the Port of Hampton Roads area, that have been approved by the Congress.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
District Library

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Lane Killam

**Phone:** (757) 441-7562

**Fax:** (757) 441-7719

**File Name:** Waterborne Commerce of the United States

**Description:**

Waterborne Commerce of the United States is a series of annual publications by the Corps of Engineers that provides statistics on the foreign and domestic waterborne commerce moved on the waters of the United States. It includes an annual summary of the amounts and kinds of commodities including data on number of vessel trips and type and drafts of vessels.



**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
District Library

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Lane Killam

**Phone:** (757) 441-7562

**Fax:** (757) 441-7719

**File Name:** Tide Tables and Tidal Current Tables

**Description:**

The Tide Tables are issued annually by NOAA and include high and low water predictions for each day for 203 ports and 6,500 tidal gage stations throughout the world. These tables have been published since 1853. Similarly, the Tidal Current Tables have been published since 1890 and include the velocities of the currents.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
District Library

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Lane Killam

**Phone:** (757) 441-7562

**Fax:** (757) 441-7719

**Description:**

The Corps of Engineers has conducted a number of studies, produced numerous reports, and obtained authorization for many projects in the Port of Hampton Roads and vicinity. Several tables summarizing this data follow. Table E-1 is a listing of studies and reports, Table E-2 includes summaries of the various studies and reports, and Table E-3 is a listing of the deep-water navigation project authorizations.

Table E-1. CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF  
HAMPTON ROADS AND VICINITY (1)

Title	Date
<ul style="list-style-type: none"> <li>• Technical Report EL-81-11, Development of a Management Plan for Craney Island Disposal, Waterways Experiment Station</li> </ul>	December 1981
<ul style="list-style-type: none"> <li>• Final Supplement I to the Final EIS and Appendix: Dam Neck Ocean Disposal Site, Site Evaluation Study, Norfolk Harbor And Channels, Virginia, Deepening and Disposal</li> </ul>	May 1985
<ul style="list-style-type: none"> <li>• Main Report, Addendum to Final EIS, Final EIS; Feasibility Report, Norfolk Harbor and Channels, Virginia, Deepening and Disposal (July 1980) (authorizing document); Volume I, House Document 99-85 (99th Congress, 1st Session)</li> </ul>	July 1985
<ul style="list-style-type: none"> <li>• Appendix 1, Technical Report; Feasibility Report, Norfolk Harbor and Channels, Virginia, Deepening and Disposal (July 1980) (authorizing document); Volume II, House Document 99-85 (99th Congress, 1st Session)</li> </ul>	July 1985
<ul style="list-style-type: none"> <li>• Appendix 2, Public Views and Responses; Feasibility Report, Norfolk Harbor and Channels, Virginia, Deepening and Disposal (July 1980) (authorizing document); Volume III, House Document 99-85 (99th Congress, 1st Session)</li> </ul>	July 1985
<ul style="list-style-type: none"> <li>• Supplemental Information Report to the Final EIS, Norfolk Harbor and Channels, Virginia, Deepening and Disposal</li> </ul>	April 1986
<ul style="list-style-type: none"> <li>• Main Report, General Design Memorandum 1, Norfolk Harbor And Channels, Virginia</li> </ul>	June 1986
<ul style="list-style-type: none"> <li>• Appendix A, Hydrodynamics, General Design Memorandum 1, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1986
<ul style="list-style-type: none"> <li>• Appendix B, Surveying and Mapping, General Design Memorandum 1, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1986
<ul style="list-style-type: none"> <li>• Appendix C, Geology and Soils (in 5 volumes), General Design Memorandum 1, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1986

Table E-1. CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF  
HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Date
• Appendix D, Channel Design and Simulation Studies, General Design Memorandum 1, Norfolk Harbor and Channels, Virginia	June 1986
• Appendix E, Anchorage Design Studies, General Design Memorandum 1, Norfolk Harbor and Channels, Virginia	June 1986
• Appendix F, Tunnel Cover Design Studies, General Design Memorandum 1, Norfolk Harbor and Channels, Virginia	June 1986
• Appendix G, Economic Analysis, General Design Memorandum 1, Norfolk Harbor and Channels, Virginia	June 1986
• 50-Foot Outbound Element, Supplemental Engineering Report to General Design Memorandum 1, Norfolk Harbor and Channels, Virginia	June 1986
• Final Report, Effects of Norfolk Harbor Deepening on Management of Craney Island Disposal Area, Waterways Experiment Station	1987
• Sections 933 and 934 Reevaluation Report, Virginia Beach Nourishment, Virginia Beach, Virginia	December 1987
• Section 933 Evaluation Report, Cape Henry Channel Sand at East Ocean View, Norfolk, Virginia	December 1987
• 55-Foot Outbound Element, Supplemental Engineering Report to General Design Memorandum 1, Norfolk Harbor and Channels, Virginia	June 1989
• Draft Report, Site Operations and Monitoring Report 1980 to 1987, Waterways Experiment Station	February 1989
• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Resort Strip, Virginia Beach, Virginia	August 1989
• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Yorktown Beach, Yorktown, Virginia	August 1989

Table E-1. CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF  
HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Date
<ul style="list-style-type: none"> <li>• 55-Foot Outbound Element, Revised Supplemental Engineering Report to General Design Memorandum 1, Norfolk Harbor and Channels, Virginia</li> </ul>	September 1989
<ul style="list-style-type: none"> <li>• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Salt Ponds Beach, Hampton, Virginia</li> </ul>	October 1989
<ul style="list-style-type: none"> <li>• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, White Marsh Beach, Hampton, Virginia</li> </ul>	October 1989
<ul style="list-style-type: none"> <li>• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Grandview Beach, Hampton, Virginia</li> </ul>	October 1989
<ul style="list-style-type: none"> <li>• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Buckroe Beach, Hampton, Virginia</li> </ul>	December 1989
<ul style="list-style-type: none"> <li>• Main Report, Long-Term Disposal (Inner Harbor), Draft Information Report, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1990
<ul style="list-style-type: none"> <li>• Appendix A, Engineering, Design, and Cost Estimates; Long-Term Disposal (Inner Harbor), Draft Information Report, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1990
<ul style="list-style-type: none"> <li>• Appendix B, Geotechnical Investigations, Long-Term Disposal (Inner Harbor), Draft Information Report, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1990
<ul style="list-style-type: none"> <li>• Appendix C, Economic Studies and Appendix D, Real Estate Studies; Long-Term Disposal (Inner Harbor), Draft Information Report, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1990
<ul style="list-style-type: none"> <li>• Appendix E, Environmental Information Report, Long-Term Disposal (Inner Harbor), Draft Information Report, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1990
<ul style="list-style-type: none"> <li>• Appendix F, Public Involvement, Long-Term Disposal (Inner Harbor), Draft Information Report, Norfolk Harbor and Channels, Virginia</li> </ul>	June 1990

Table E-1. CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF  
HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Date
• Draft Executive Summary, Long-Term Dredged Material Management (Inner Harbor), Norfolk Harbor and Channels, Virginia	June 1990
• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Ocean Park Beach, Virginia Beach, Virginia	July 1990
• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Sandbridge Beach, Virginia Beach, Virginia	August 1990
• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Willoughby Spit Area, Norfolk, Virginia	August 1990
• Section 933 Evaluation Report, Thimble Shoal and Atlantic Ocean Channels, Central Ocean View Beach, Norfolk, Virginia	March 1991
• Final Supplement, Long-Term Dredged Material Management (Inner Harbor), Norfolk Harbor and Channels, Virginia	May 1992
• Final EIS for the Designation of an Ocean Dredged Material Disposal Site Located Offshore, Norfolk, Virginia, Prepared by the EPA	November 1992
• The Ports of Hampton Roads and Ports on the James and York Rivers, Virginia, Port Series #11, Navigation Data Center, Water Resources Research Center	1993
• Lower Bay Beneficial Uses of Dredged Material, Long-Term Dredged Material Management, Draft Information Report to The Commonwealth of Virginia and the Virginia Port Authority, Norfolk Harbor and Channels, Virginia	July 1994
• Limited Reevaluation Report, Norfolk Harbor and Channels, Virginia, 50-Foot Anchorage Project	May 1996 Revised July 1996

Table E-1. CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF  
HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Date
<ul style="list-style-type: none"> <li>• Section 905(b) Water Resources Development Act of 1986 Analysis (Reconnaissance Report), Elizabeth River Environmental Restoration Study, Elizabeth River Basin, Virginia</li> </ul>	August 1997
<ul style="list-style-type: none"> <li>• Shallow Draft Navigation in the Commonwealth of Virginia</li> </ul>	February 1998
<ul style="list-style-type: none"> <li>• Final Report, Norfolk Harbor and Channels, Virginia, Evaluation of Sediment Test Results for the Norfolk Harbor 40-Foot Channel</li> </ul>	May 1998
<ul style="list-style-type: none"> <li>• Final Report, Norfolk Harbor and Channels, Virginia, Evaluation of Sediment Test Results for the Southern Branch</li> </ul>	August 1998
<ul style="list-style-type: none"> <li>• Section 905(b) Water Resources Development Act of 1986 Analysis (Reconnaissance Report), Norfolk Harbor and Channels, Eastward Expansion of Craney Island, Portsmouth, Virginia</li> </ul>	September 1998
<ul style="list-style-type: none"> <li>• Dredging Master Plan, City of Norfolk, Virginia</li> </ul>	March 1999
<p>(1) Unless otherwise noted, the study/report was accomplished by Norfolk District and may be referenced in the Norfolk District Library.</p>	

Table E-2. SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY (1)

Title	Summary
Norfolk Harbor and Channels, Virginia, Feasibility Report and Final Environmental Impact Statement, July 1980, and FEIS Addendum, December 1980 (all in House Document 99-85 dated 18 July 1985, 3 volumes)	The report recommended deepening the major channels in Hampton Roads to a depth of 55 feet, as well as lesser improvements on the Elizabeth River and its Southern Branch. It also recommended construction of the 6,000-acre Suffolk site to replace the Craney Island Disposal Area (now known as Craney Island Dredged Material Area). However, the Board of Engineers for Rivers and Harbors recommended ocean placement for all suitable material from the deepening and Craney Island for all material unsuitable for ocean placement. However, all material dredged from the inner harbor for the 50-foot deepening project was placed in Craney Island. In addition, the Board recommended that an investigation be conducted to develop a long-term placement plan.
Development of a Management Plan for Craney Island Disposal, Technical Report EL-81-11, Waterways Experiment Station, December 1981	The report recommended compartmentalization (three subcontainments), dewatering, and raising the levees to +30 feet mean low water. It was estimated that with this plan Craney Island would fill in 36 years; otherwise, it would fill in 19 years. The proposed Norfolk Harbor and Channels project deepening was not considered in this plan.
Norfolk Harbor and Channels, Virginia, Deepening and Disposal, Final Supplement 1 to the FEIS, and Appendix: Dam Neck Ocean Disposal Site Evaluation Study, May 1985	The report addressed modifications to the proposed placement plan for the Norfolk Harbor and Channels project not discussed in previous project documents. Specifically, it identified an expansion of the existing Dam Neck Disposal Site (now known as Dam Neck Dredged Material Area [DMA]) as an additional alternative site for placement of dredged material.



Table E-2. SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Summary
Norfolk Harbor and Channels, General Design Memorandum 1, June 1986	The GDM affirmed and modified the July 1980 feasibility report recommended plan. It provided for the placement of all inner harbor dredged material in Craney Island and all outer harbor dredged material in the Dam Neck DMA, except for material used for beneficial purposes.
Norfolk Harbor and Channels, Virginia, 50-Foot Outbound Element, Supplemental Engineering Report to General Design Memorandum 1, June 1986	The report provided a consolidated information source for actions pertaining to the 50-foot outbound element.
Effects of Norfolk Harbor Deepening on Management of Craney Island Disposal Area, Waterways Experiment Station, April 1983 (draft), 1987 (final)	The report recommended the construction of a fourth subcontainment adjacent to the west side of Craney Island. It was estimated that Craney Island could then contain the deepening material and still not fill for 10 to 20 years.
Site Operations and Monitoring Report 1980 to 1987, Waterways Experiment Station, February 1989 (draft)	The report documented site operations and monitoring data for Craney Island from October 1980 to September 1987 and gave recommendations on management approaches and monitoring activities. It determined that The existing management plan will result in a gain of 3 years in Craney Island's useful life.

Table E-2. SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Summary
55-Foot Outbound Element, Supplemental Engineering Report to General Design Memorandum 1, Norfolk Harbor and Channels, June 1989	This report addressed changes in the construction and disposal plan for the 55-foot outbound element of the Norfolk Harbor and Channels project as described in the 1986 General Design Memorandum.
Norfolk Harbor and Channels, Virginia, 55-foot Outbound Element, Supplemental Engineering Report to General Design Memorandum 1, revised September 1989	The report recommended placement of all new work from the inner harbor deepening project in the Dam Neck DMA.
Norfolk Harbor and Channels, Virginia, Long-Term Disposal (Inner Harbor), Draft Information Report, June 1990	The report was prepared as an information document to assist the local sponsor, the Commonwealth of Virginia, in providing the necessary placement area for dredged material. It disclosed two plans. One was the expansion of Craney Island by 2,500 acres to the west and north. The other involved barging clean material to and placement in the Dam Neck DMA and/or Norfolk Disposal Site (now known as Norfolk DMA) and placement of unsuitable material in the remaining storage in the existing Craney Island.

Table E-2. SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Summary
Twelve Section 933 Reports accomplished as part of the Norfolk Harbor and Channels Long-Term Disposal study for the outer harbor area of Hampton Roads, and as part of the Baltimore Harbor and Channels project (Cape Henry Channel), December 1987 to March 1991	These reports investigated the feasibility of placing dredged material on area beaches. See Section III of Main Report.
Norfolk Harbor and Channels, Virginia, Long-Term Dredged Material Management (Inner Harbor), Final Supplemental Report, May 1992	This was the final version of the June 1990 draft report. Based on that draft report and the subsequent action by the Virginia General Assembly and Governor Wilder in 1991 to preclude any further expansion of Craney Island, it is believed that the second option discussed in the June 1990 report should be pursued as an acceptable solution.
FEIS for the Designation of an Ocean Dredged Material Disposal Site Located Offshore Norfolk, Virginia, Environmental Protection Agency, November 1992	The FEIS evaluated various dredged material placement alternatives and recommended the designation of a site on the continental shelf known as the Norfolk DMA. This site has a very large capacity and can receive materials consisting of clay- and silt-sized particles.

Table E-2. SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Summary
The Ports of Hampton Roads and Ports on the James and York Rivers, Virginia, Port Series No. 11, Navigation Data Center, Water Resources Research Center, 1993	The report gave a general description of the port, including harbor and channel improvements. It provided data on channel dimensions, tides, currents, anchorages, bridges and tunnels, and weather. It also provides a detailed listing of all piers, wharves, and docks located adjacent to the channels waterways.
Norfolk Harbor and Channels, Virginia, Long-Term Dredged Material Management, Lower Bay Beneficial Uses of Dredged Material, Draft Information Report, July 1994	The report was also prepared as an information document for the Commonwealth of Virginia and was an outgrowth of the June 1990 and May 1992 reports. Seven potential beneficial use alternatives were presented, and, of these, only two were selected as meeting the existing criteria. Both involved island building, which has finite applicability and can only be considered as a complementary part of the long-term solution to dredged material placement. This was the final version of this report.
Limited Reevaluation Report, Norfolk Harbor and Channels, Virginia, 50-Foot Anchorage Project, May 1996, revised July 1996	The report provided the benefits and costs for the construction of a 50-foot-deep anchorage to serve the present and future needs of the port.
Shallow-Draft Navigation in the Commonwealth of Virginia, February 1998	The report provided a catalog of the shallow-draft navigation projects within the Commonwealth. It serves as a tool to assist the state with its comprehensive plans for the development and conservation of water and related land resources.

Table E-2. SUMMARIES OF CORPS OF ENGINEERS STUDIES AND REPORTS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Title	Summary
Final Report, Norfolk Harbor and Channels, Virginia, Evaluation of Sediment Test Results for the Norfolk Harbor 40-Foot Channel, May 1998	The report provided a description of the data collection and analysis and an overview of the methodology that was used to assess and evaluate the potential contaminants of concern in the Norfolk Harbor 40-foot channel. It also provided a detailed description of those contaminants including information on toxicity, chemical fate, and potential sources.
Final Report, Norfolk Harbor and Channels, Virginia, Evaluation of Sediment Test Results for the Southern Branch, August 1998	The report provided a description of the data collection and analysis and an overview of the methodology that was used to assess and evaluate the potential contaminants of concern in the Southern Branch. It also provided a detailed description of those contaminants including information on toxicity, chemical fate, and potential sources.
(1) Unless otherwise noted, the study/report was accomplished by Norfolk District and may be referenced in the Norfolk District Library.	

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY (1)

Acts	Work authorized	Project authorization documents
<u>ATLANTIC OCEAN CHANNEL</u>		
November 17, 1986	A channel 57 feet deep, 1,000 feet wide, approximately 11 miles long between the 57-foot contours in the Atlantic Ocean and the mouth of the Chesapeake Bay	H. Doc. 99-85, 99 <sup>th</sup> Cong., 1 <sup>st</sup> session (2)
<u>THIMBLE SHOAL CHANNEL</u>		
August 8, 1917	A channel 40 feet deep, 750 feet wide	H. Doc. 140, 65 <sup>th</sup> Cong., 1 <sup>st</sup> session
September 3, 1954	A channel 40 feet deep, 1,000 feet wide	S. Doc. 122, 83 <sup>d</sup> Cong., 2 <sup>d</sup> session (3)
October 27, 1965	A channel 45 feet deep, 1,000 feet wide	H. Doc. 187, 89 <sup>th</sup> Cong., 1 <sup>st</sup> session
November 17, 1986	A channel 55 feet deep, 1,000 feet wide	H. Doc. 99-85, 99 <sup>th</sup> Cong., 1 <sup>st</sup> session
<u>NORFOLK HARBOR AND ELIZABETH RIVER CHANNELS</u>		
August 14, 1876	A channel 25 feet deep to confluence of Southern and Eastern Branches	Ex. Doc. 60, 45 <sup>th</sup> Cong., 2 <sup>d</sup> session (4)
March 2, 1907	A channel 30 feet deep to Navy Yard	H. Doc. 381, 59 <sup>th</sup> Cong., 1 <sup>st</sup> session

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Acts	Work authorized	Project authorization documents
<u>NORFOLK HARBOR AND ELIZABETH RIVER CHANNELS</u> <u>(Cont'd)</u>		
June 25, 1910	A channel 35 feet deep to Navy Yard	H. Doc. 551, 61 <sup>st</sup> Cong., 2 <sup>d</sup> session
August 8, 1917	A channel 40 feet deep and 750 wide	H. Doc. 140, 65 <sup>th</sup> Cong., 1 <sup>st</sup> session
September 3, 1954	A channel 40 feet deep and 1,500 feet wide from 40-foot contour in Hampton Roads to a point just south of Norfolk International Terminal	S. Doc. 122, 83 <sup>d</sup> Cong., 2 <sup>d</sup> session
October 27, 1965	A channel 45 feet deep and 800 to 1,500 feet wide from Ft. Wool to Lamberts Point	H. Doc. 187, 89 <sup>th</sup> Cong., 1 <sup>st</sup> session
November 17, 1986	A channel 55 feet deep and 800 to 1500 feet wide from that depth in Hampton Roads to Lamberts Point; thence, a channel 45 feet deep and 750 feet wide to the junction of the Southern and Eastern Branches	H. Doc. 99-85, 99 <sup>th</sup> Cong., 1 <sup>st</sup> session

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Acts	Work authorized	Project authorization documents
<u>SOUTHERN BRANCH CHANNEL</u>		
June 25, 1910	A channel 22 and 25 feet deep	H. Doc. 551, 61 <sup>st</sup> Cong., 2 <sup>d</sup> session
August 8, 1917	A channel 40 feet deep and 450 feet wide from the mouth to Belt Line Railroad bridge (River Mile 14)	H. Doc. 140, 65 <sup>th</sup> Cong., 1 <sup>st</sup> session
March 3, 1925	A channel 30 feet deep and 375 feet wide to the Norfolk Southern bridge (River Mile 15); thence, 25 feet deep and generally 200 feet wide to Norfolk Southern Railway bridge (River Mile 17.5)	H. Doc. 226, 68 <sup>th</sup> Cong., 1 <sup>st</sup> session
August 30, 1935	A channel 25 feet deep and 200 feet wide from Norfolk Southern Railway bridge (River Mile 17.5) to a point 2,500 feet above the bridge, with a turning basin 500 feet square	H. Doc. 182, 73 <sup>d</sup> Cong., 2 <sup>d</sup> session



Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Acts	Work authorized	Project authorization documents
<p style="text-align: center;"><u>SOUTHERN BRANCH CHANNEL</u> (Cont'd)</p>		
June 30, 1948	Approach and turning area 40 feet deep and a maximum of 830 feet wide opposite Norfolk Naval Shipyard; thence, a channel 35 feet deep and 375 to 250 feet wide to a point 1,900 feet above Norfolk Southern Railway bridge (River Mile 17.5) and a turning basin 35 feet deep and 600 by 600 feet at upstream end	H. Doc. 545, 80 <sup>th</sup> Cong., 2 <sup>d</sup> session
October 27, 1965	A channel 40 feet deep from the Norfolk and Portsmouth Belt Line bridge to the Norfolk Southern bridge (River Mile 15) and a turning basin 35 feet deep opposite St. Julians Creek	H. Doc. 187, 89 <sup>th</sup> Cong., 1 <sup>st</sup> session
October 1, 1976	A channel and turning basin 35 feet deep from the vicinity of Norfolk Southern Railway bridge at Gilmerton (River Mile 17.5), upstream to the vicinity of the Norfolk and Portsmouth Belt Line Railroad bridge (River Mile 19.6)	H. Doc. 355, 94 <sup>th</sup> Cong., 2 <sup>d</sup> session

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

<u>Acts</u>	<u>Work authorized</u>	<u>Project authorization documents</u>
<u>SOUTHERN BRANCH CHANNEL</u> (Cont'd)		
November 17, 1986	A channel 45 feet deep and 375 to 450 feet wide from the junction with the Eastern Branch to the Norfolk Southern Railroad bridge (River Mile 15); thence, a channel 40 feet and 250 to 500 feet wide to the U.S. Routes 460 and 13 highway bridge (River Mile 17.5), with an 800 feet square turning basin at that point	H. Doc 99-85, 99 <sup>th</sup> Cong., 1 <sup>st</sup> session
<u>EASTERN BRANCH CHANNEL</u>		
July 5, 1884	Improvement of Eastern Branch	Annual Report 1885, page 1015
March 2, 1907	A channel 25 feet deep and 500 feet wide from the junction of the branches to the Norfolk Southern Railway bridge (River Mile 1.1)	H. Doc. 373, 59 <sup>th</sup> Cong., 1 <sup>st</sup> session
March 2, 1907	Removal of shoals at mouth	Specified in the Rivers and Harbors Act of March 2, 1907

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Acts	Work authorized	Project authorization documents
<u>EASTERN BRANCH CHANNEL</u> (Cont'd)		
March 3, 1925	A channel 25 feet deep and 200 feet wide from Norfolk Southern Railway bridge (River Mile 1.1) to the Norfolk Southern Railway bridge (River Mile 2.5)	H. Doc. 226, 68 <sup>th</sup> Cong., 1 <sup>st</sup> session
July 3, 1930	A channel 30 feet deep to a point opposite the terminal of Imperial Tobacco Company, in Berkley (inactive)	H. Doc. 37, 71 <sup>st</sup> Cong., 1 <sup>st</sup> session
March 2, 1945	A channel 25 feet deep and 300 feet wide from Norfolk Southern Railway bridge to Campostella Bridge (River Mile 1.6)	H. Doc. 224, 76 <sup>th</sup> Cong., 1 <sup>st</sup> session
<u>WESTERN BRANCH CHANNEL</u>		
March 4, 1913	A channel 24 feet deep and 300 to 200 feet wide to West Norfolk Bridge	H. Doc. 566, 62 <sup>d</sup> Cong., 2 <sup>d</sup> session
July 3, 1930	A channel 18 feet deep to a point about 3,000 feet above West Norfolk Bridge	H. Doc. 265, 70 <sup>th</sup> Cong., 1 <sup>st</sup> session

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Acts	Work authorized	Project authorization documents
<u>ANCHORAGES</u>		
June 25, 1910	An anchorage 30 feet deep at Lamberts Point	H. Doc. 551, 61 <sup>st</sup> Cong., 2 <sup>d</sup> session
August 8, 1917	An anchorage 12 feet deep at Pinners Point	H. Doc. 605, 63 <sup>d</sup> Cong., 2 <sup>d</sup> session
September 3, 1954	An anchorage 38 feet deep and 1,500 feet square; anchorage 35 feet deep and 1,500 feet square; and anchorage 20 feet deep, 1,000 feet wide, and 3,000 feet long	S. Doc. 122, 83 <sup>d</sup> Cong., 2 <sup>d</sup> session
October 27, 1965	Two anchorages opposite Sewells Point 45 feet deep with 1,200-foot swinging radius	H. Docs. 143 & 187, 89 <sup>th</sup> Cong., 1 <sup>st</sup> ses.
October 27, 1965	Two deep-draft anchorage berths opposite Newport News 45 feet deep over a 1,200-foot swinging radius	H. Docs. 143 & 187, 89 <sup>th</sup> Cong., 1 <sup>st</sup> ses.
November 17, 1986	Three fixed mooring anchorage facilities with a depth of 55 feet, each capable of handling two large vessels simultaneously	H. Doc 99-85, 99 <sup>th</sup> Cong., 1 <sup>st</sup> session

Table E-3. DEEP-WATER NAVIGATION PROJECT AUTHORIZATIONS, THE PORT OF HAMPTON ROADS AND VICINITY  
(Cont'd)

Acts	Work authorized	Project authorization documents
<u>DREDGED MATERIAL PLACEMENT AREAS</u>		
July 24, 1946	A trapezoidal-shaped area of about 2,500 acres of flats adjacent to and north of Craney Island, including levees, sluiceways, rehandling basins, and approach and exit areas	H. Doc. 563, 79 <sup>th</sup> Cong., 2 <sup>d</sup> session
<u>CHANNEL TO NEWPORT NEWS</u>		
June 25, 1910	A channel 35 feet deep and 400 feet wide	H. Doc. 550, 61 <sup>st</sup> Cong., 2 <sup>d</sup> session
August 8, 1917	A channel 35 feet deep and 600 feet wide	H. Doc. 605, 63 <sup>rd</sup> Cong., 2 <sup>d</sup> session
January 21, 1927	A channel 40 feet deep and 600 feet wide	H. Doc. 486, 67 <sup>th</sup> Cong., 4 <sup>th</sup> session
October 27, 1965	A channel 45 feet deep and 800 feet wide from that depth in Norfolk Harbor Channel about 4.5 miles long	H. Docs. 143 & 187, 89 <sup>th</sup> Cong., 1 <sup>st</sup> ses.
November 17, 1986	A channel 55 feet deep and 800 feet wide from that depth in Norfolk Harbor Channel (Elizabeth River) about 4.5 miles long	H. Docs. 99-85, 99 <sup>th</sup> Cong., 1 <sup>st</sup> session

- (1) Unless otherwise noted, the act may be referenced in the Norfolk District Library.
- (2) House Document 99-85, 99<sup>th</sup> Congress, First session.
- (3) Senate Document 122, 83<sup>d</sup> Congress, Second session.
- (4) Executive Document 60, 45<sup>th</sup> Congress, Second session.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Waterways and Ports Branch

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Richard L. Klein

**Phone:** (757) 441-7243

**Fax:** (757) 441-7664

**File Name:** Project Map Files

**Description:**

The Norfolk District's project map files are located in the library. The files contain the original survey drawings, organized chronologically by project in flat file map drawers. Various types of surveys of the channels, anchorages, and other project features are included, such as condition surveys, reconnaissance surveys, plans for dredging, before dredging surveys, and after dredging surveys. Each original survey drawing is assigned a unique file number. The projects and file number prefixes pertinent to the Norfolk Harbor and Channels projects in Hampton Roads are as follows:

<u>Project</u>	<u>Norfolk District File Number Prefix</u>
• Anchorages (Hampton Roads general)	H-11-20
• Chesapeake Bay Bridge and tunnel	H-10-22
• Entrance channel	H-51-25
• Craney Island	H-10-13
• Dam Neck disposal	H-31-10
• Elizabeth River	
• Eastern Branch	H-12-14
• Southern Branch	H-14-10
• Western Branch	H-11-14
• 35-Foot channel (Southern Branch)	H-13-10
• Fort Norfolk	H-12-13
• Hampton Roads general	H-11-20
• Newport News Channel	H-10-11
• Norfolk harbor	
• 40-, 45-, and 50-Foot channel	H-10-10
• General	H-30-10
• Scotts Creek, Elizabeth River	H-11-15
• Southern Branch, Elizabeth River	H-13-10
• Thimble Shoal Channel	H-23-11



**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Waterways and Ports Branch

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Richard L. Klein

**Phone:** (757) 441-7243

**Fax:** (757) 441-7664

**File Name:** Dredging Schedules

**Description:**

Dredging schedules for the current year are provided by way of the Corps of Engineers Navigation Data Center Dredging Program at <http://www.wrsc.usace.army.mil/ndc/dredge.htm>. This source also provides data on waterborne commerce and port facilities.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Planning Branch  
Environmental Analysis Team

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Thomas A. McCarthy

**Phone:** (757) 441-7028

**Fax:** (757) 441-7646

**File Name:** National Environmental Policy Act (NEPA) Documents

**Description:**

The Environmental Analysis Team provides comprehensive environmental evaluations for proposed Corps of Engineers water resource development projects. Products from the Environmental Analysis Team generally take the form of a NEPA document, such as Environmental Impact Statements, Environmental Assessments, Records of Decision, and Findings of No Significant Impact. Hard copies of all reports resulting from environmental resource investigations performed as part of planning studies can be found in the Environmental Analysis Team files. Environmental analysis encompasses both "with" and "without" project alternatives and typically addresses the following issues:

- Wetlands
- Aquatic resources
- Biological resources
- Historical resources
- Cultural resources
- Hazardous, Toxic, and Radioactive Waste
- Aesthetic resources
- Soils

- Water and sediment quality
- Endangered species
- Air quality
- Noise
- Social impacts
- Mitigation and monitoring plan
- Compliance with environmental Federal statutes and executive orders

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Planning Branch  
Environmental Analysis Team

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Helene Haluska

**Phone:** (757) 441-7008

**Fax:** (757) 441-7646

**File Name:** Cultural Resource Reports

**Description:**

Hard copies of all reports resulting from cultural resource investigations performed as part of planning studies can be found in the Environmental Analysis Team files. These reports consist of two types of reports: (1) background historical research and (2) results of field investigations. Copies of these reports can also be found at the Virginia Department of Historic Resources.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Regulatory Branch

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Craig Jones

**Phone:** (757) 441-7070

**Fax:** (757) 441-7678

**File Name:** Regulatory Branch Permit Database

**Description:**

This file contains all permit requests from 1990 to the present with specific information on the project manager, type of work proposed, date of completion, issuance of public notice, and final outcome of the permit process. This record can be utilized to search for previous permit requests at a particular location or for other activities within a specific area or waterway. The electronic database can be referenced by latitude and longitude, waterway, or applicant name.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Regulatory Branch

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Susan Schrader

**Phone:** (757) 441-7652

**Fax:** (757) 441-7678

**File Name:** Regulatory Branch Permit Records

**Description:**

This file contains all permits issued by the Norfolk District for work in waters of the United States and wetlands associated with Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act. There are both hard copies and microfiche versions of all permits issued prior to 1989 available from the Regulatory Branch and an electronic database that contains copies of all permits issued from 1989 to the present.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Regulatory Branch

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Willie Ricks or John Evans

**Phone:** (757) 441-7580 or 7794

**Fax:** (757) 441-7678

**File Name:** Aerial Photographs

**Description:**

This file contains low level black and white and color aerial photographs of various portions of the Commonwealth of Virginia that are useful in the interpretation of construction activities within various localities. These photographs are available for the years 1977, 1978, 1979, 1982 and 1985 in 1:12,000 scale. In addition, there are low level color infrared photographs available for the area from the years 1990 and 1994/1995 in 1:40,000 scale. These photographs may be reviewed at the District office by calling the above contacts.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Operations Support and Readiness Branch

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Tom Friberg

**Phone:** (757) 441-7645

**Fax:** (757) 441-7322

**File Name:** Dredging Report of Operations

**Description:**

Dredging Report of Operations are completed for all the dredging projects performed by the Norfolk District. The reports from the 1960's to 1983 are available in paper copy only, from 1983 and 1994 they are computerized on "Microsoft Excel," and from 1994 to the present they are computerized on "Filemaker Pro." The data on the Report of Operations include the following:

- Dredging project name, depth, and location
- Bid and contract numbers
- Important dates, including bid date, award date, notice to proceed date, and start and completion dates
- Work performance based on contractor daily reports
- Dredge information, including attending plant
- Distribution of dredging time in minutes
- Survey results
- Bid results



**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Operations Support and Readiness Branch  
**Location:** 803 Front Street  
Norfolk, VA 23510-1096  
**Contact:** Tom Friberg  
**Phone:** (757) 441-7645  
**Fax:** (757) 441-7322

**File Name:** Craney Island Dredged Material Database

**Description:**

The Craney Island Dredged Material Database was created with the software "Filemaker Pro." The database can be used to sort or find data by any parameter. The parameters in the database include the following:

- The permittee or user of Craney Island, including their address
- The contractor who performed the dredging
- The location where the dredging took place
- The permit number, including the date and expiration date of the permit
- The deposit or contract number
- The dates dredging was performed
- The cubic yards of material dredged and the toll paid for disposal into Craney Island
- Where the material was placed at Craney Island--in which cell or in the rehandling basin
- The type of dredging performed--maintenance, new work, or permit dredging
- The type of user--commercial, other Federal agencies, or the Corps of Engineers

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Real Estate Division

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Robert P. Turner or Dillard H. Horton, Jr.

**Phone:** (757) 441-7733 or 7735

**Fax:** (757) 441-7437

**File Name:** Real Estate Management Information System

**Description:**

In general, the Real Estate Division coordinates the acquisition, management, and disposal of real property and real property interest along the Intracoastal Waterways in southeastern Virginia and northeastern North Carolina. In addition to the Intracoastal Waterways, Real Estate Division also handles real property transactions for civil works projects in Virginia and the Army and Air Force bases and Corps of Engineers facilities in the Commonwealth of Virginia, with the exception being the area around Washington, D.C.--the Capitol Region. Real Estate Division is the official real estate record holder for these installations and projects.

This particular file is an automated database with information of the various real estate projects, as well as information on all outgrants to others, such as leases, easements, licenses, and permits.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Real Estate Division

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Robert P. Turner or Dillard H. Horton, Jr.

**Phone:** (757) 441-7733 or 7735

**Fax:** (757) 441-7437

**File Name:** Real Estate Project Maps

**Description:**

This file includes Mylar hard copies and microfilm of various active, as well as former, Army and civil corks sites, which are available for review. These maps and drawings show acreage, estate acquired, when, from whom, how the parcel was acquired, information on any disposals, and general information.

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Real Estate Division

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Robert P. Turner or Dillard H. Horton, Jr.

**Phone:** (757) 441-7733 or 7735

**Fax:** (757) 441-7437

**File Name:** Real Estate Historical Files

**Description:**

These are the official records showing how and when the Federal Government acquired certain easements, fees, and other interests in real property for civil works projects, Army and Air force Bases, Army Reserve Centers, and other defense agencies. Also included in these files are the acquisition and disposal records for Fort Norfolk and Craney Island, which are a part of the Port of Hampton Roads. These records are hard copy files, with some records dating back to the Revolutionary War. The files are divided as follows:

- I. Acquisition Documents, Exhibit A. Deeds and other acquisition papers and instruments.
- II. Disposal Documents, Exhibit B. Quit claim deeds or transfer papers and other documents in chronological order pertaining to property disposal actions. These are considered to be permanent records.
- III. Jurisdiction, Exhibit C. All papers relating to the extent of Federal jurisdiction over the land acquired by the United States for military purposes or civil works purposes within several states.

- IV. Relocation, Exhibit D. All papers of a permanent value relating to relocations such as utilities, roads, closing or vacation documents, and cemetery relocations.
- V. Miscellaneous, Exhibit E. Contains extra sheets relating to claims arising out of the use and occupancy of regulations under which processed and final disposition. This section also used to file papers or documents that do not clearly belong under any of the preceding exhibits.
- VI. Final Project Map, Exhibit F. A folded print of the final project map.

Historical files are available for the following specific projects associated with the with the Port of Hampton Roads:

- Atlantic Intracoastal Waterway, Atlantic and Chesapeake Canal
- Atlantic Intracoastal Waterway, Dismal Swamp Canal
- Atlantic Intracoastal Waterway, North Landing River
- Camp Pendleton
- Fort Eustis
- Fort Monroe
- Fort Norfolk
- Fort Story
- Langley Air Force Base
- Nansemond Disposal Area
- Norfolk Harbor, Craney Island

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Real Estate Division

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Robert P. Turner or Dillard H. Horton, Jr.

**Phone:** (757) 441-7733 or 7735

**Fax:** (757) 441-7437

**File Name:** Real Estate Project Cooperation Agreement Files

**Description:**

These files include hard copy Real Estate Division records of the Norfolk District's joint ventures with cities, counties, and/or the Commonwealth for cost-shared project for flood protection, dredging, environmental enhancement, etc. These files are divided into the following sections for these civil works projects:

- I. Project Authorizations. Reconnaissance reports, feasibility studies, phase I and II documents, authoring legislation, and/or original authentic copies of approval correspondence.
- II. 221 Contracts. Authorizing documents, ordinance, and resolutions.
- III. Permanent Real Estate Records. Deeds, real estate maps, and title papers.
- IV. Miscellaneous. Correspondence, permits, maps, etc., for original work.
- V. Inspection Reports. Reports and correspondence related to remedial work.
- VI. Maintenance Work (Year). Complete with all correspondence, maps, permits, etc.

Project Cooperation Agreement files are available for the following specific projects associated with the with the Port of Hampton Roads:

- Anderson Park Shoreline Protection, Newport News
- Atlantic Ocean Channel
- Bennetts Creek
- Channel Connecting York River with Back Creek to Slaights Wharf
- Channel from Phoebus
- Channel to Newport News
- Deep Creek, Newport News
- Hampton Creek
- Hampton Institute Shoreline Protection
- James River
- Jamestown Park Shoreline Protection
- Lafayette River
- Little River (Creek)
- Lynnhaven Inlet
- Mattaponi River
- Nandua Creek
- Nansemond River
- Newport News Creek
- Norfolk Harbor
- Norfolk Local Flood Protection
- Portsmouth Harbor, Channel to Nansemond Ordnance Depot
- Rudee Inlet
- Thimble Shoal Channel
- Virginia Beach Canal Number 2
- Virginia Beach Erosion Control and Hurricane Protection
- Willoughby Channel
- Willoughby Spit Beach Erosion Control and Hurricane Protection

**Organization:** U.S. Army Corps of Engineers  
Norfolk District  
Real Estate Division

**Location:** 803 Front Street  
Norfolk, VA 23510-1096

**Contact:** Robert P. Turner or Dillard H. Horton, Jr.

**Phone:** (757) 441-7733 or 7735

**Fax:** (757) 441-7437

**File Name:** Real Estate Defense Environmental Restoration Files

**Description:**

These hard copy files are listed by randomly assigned numbers and contain information on formerly owned or used defense sites in Virginia between World War I and the mid 1990's. Many of these sites were located in or near the Port of Hampton Roads area. Defense Environmental Restoration files are available for the following specific projects associated with the with the Port of Hampton Roads:

- Animal Embarkation Depot, C03VA106700
- Camp Casino, C03VA106800
- Camp Hill, C03VA006900
- Camp Patrick Henry Laundry, C03VA003700
- Cape Charles Air Force Station Bunkers, C03VA003100
- Chesapeake Bay Search Light Station, C03VA003600
- Coastal Artillery School, C03VA105500
- Debarkation Hospital, C03VA007100
- Embarkation Hospital, C03VA007200
- Engineers Depot, C03VA006600
- Fisherman Island National Wildlife Refuge, CO3VA008100
- Ford Plant, C03VA004000
- Fort Eustis, C03VA002900



- Fort Story, C03VA003200
- Fort Wool, C03VA010300
- Fuel Depot Yorktown, C03VA099800
- Gilmerton Lumber Storage Yard, C03VA107200
- Lambert Point Guard Barracks, C03VA006700
- Langley Air Force Base, Advance Defense Continental Missile Facility,  
C03VA011100
- Langley Air Force Base, C03VA103900
- Lynnhaven Fire Control Station, C03VA011700
- Mine Wharf, C03VA103200
- Mining Casement, C03VA105000
- Nansemond Ordnance Depot, C03VA004600
- Naval Station, C03VA026600
- Naval Supply Center, Cheatham Annex, C03VA027500
- Norfolk Naval Air Station, C03VA027700
- Norfolk Naval Ship Yard, C03VA026400
- Plume Tree Island Range, C03VA020201
- Port Medical Supply, C03VA106100
- Quarter Masters Depot, C03VA007400
- Saint Helena, Norfolk Naval Ship Yard, C03VA028700
- Ship Shoal and Godwin Island, C03VA014800
- Submarine Mine Defense, C04VA105100
- Torpedo Defense, C03VA104900
- Transportation Service School, CO3VA106200
- Virginia State Fuel Farm, C03VA027400
- Warehouse Group Numbers 2 and 3, C03VA007600

# **U.S. MARITIME ADMINISTRATION**

**Organization:** U.S. Maritime Administration  
South Atlantic Region  
Regional Maritime Programs  
**Location:** Room 211, Building 4D  
7737 Hampton Boulevard  
Norfolk, VA 23505  
**Contact:** L. Frank Mach  
**Phone:** (757) 441-6393  
**Fax:** (757) 440-0812

**Description:**

The Maritime Administration has published numerous reports concerning its activities and responsibilities. These reports are listed as follows by category:

**GENERAL**

- Annual Report of the Maritime Administration, Fiscal Year 1996. Prepared by the Maritime Administration, phone (202) 366-5807
- A Shipper's Guide for Proper Stowage of Intermodal Containers for Ocean Transport. Prepared by the Maritime Administration, phone (202) 366-4357
- Environmental Advantages of Inland Barge Transportation. Prepared by the Maritime Administration, phone (202) 366-4357
- Foreign Flag Merchant Ships Owned by U.S. Parent Companies. Prepared by the Maritime Administration, phone (202) 366-2267
- Glossary of Shipping Terms. Prepared by the Maritime Administration, phone (202) 366-4357

- Introducing the Maritime Administration. Prepared by the Maritime Administration, phone (202) 366-5807
- MARAD Publications, Fiscal Year 1997. Prepared by the Maritime Administration, phone (202) 366-5807
- Marine Fire Prevention--Fire Fighting and Fire Prevention. Prepared for the Maritime Administration, Government Printing Office Stock Number 003-007-00099-5, phone (202) 512-1800
- Maritime Subsidies. Prepared by the Maritime Administration, phone (202) 366-5773
- Merchant Fleets of the World--Oceangoing Steam and Motor Ships of 1,000 Gross Tons and Over. Prepared by the Maritime Administration, phone (202) 366-2267
- Outlook for U.S. Shipbuilding and Repair Industry. Prepared by the Maritime Administration, phone (202) 366-5841
- Report on Foreign Shipbuilding. Prepared by the Maritime Administration, phone (202) 366-5841
- Report on Survey of U.S. Shipbuilding and Repair Facilities. Prepared by the Maritime Administration, phone (202) 366-5841
- U.S. Exports and Imports Transshipped via Canadian Ports, Fiscal Year 1995. Prepared by the Maritime Administration, phone (202) 366-2267. Also available via e-mail: [Robert\\_Christensen@Postmaster1.dot.gov](mailto:Robert_Christensen@Postmaster1.dot.gov)

- Vessel Inventory Report. Prepared by the Maritime Association, phone (202) 366-2267
- Vessel Inventory Report (United States Dry Cargo and Tanker Fleets 1,000 Gross Tons and Over), Quarterly Report. Prepared by the Maritime Administration, phone (202) 366-2267

## **FLEET AND VESSEL MANAGEMENT SYSTEMS, PLANNING, AND TECHNOLOGY**

- An Assessment of Rail and Container-Handling Capabilities at Defense Logistics Agency Depots. Prepared by Leeper, Cambridge, and Campbell, Inc. National Technical Information Service Number PB91-183970/AS--A09, phone (703) 487-4650
- Development in Surface Fairing Procedures. Prepared by the University of New Orleans. National Technical Information Service Number PB90-216938/AS--A05, phone (703) 487-4650
- Development of Analysis of Alternatives for Expanding U.S. Ship Repair Capacity to Meet National Defense Mobilization Requirements. Prepared by Booz, Allen, and Hamilton. National Technical Information Service Number PB91-135491/AS--A08, phone (703) 487-4650
- Maintenance and Repair of RRF Propulsion Boilers and Diesel Engines. Prepared by Seaworthy Systems, Inc. National Technical Information Service, phone (703) 487-4650
  - Volume I, Final Report. National Technical Information Service Number PB91-168658--A04
  - Volume II, Appendices. National Technical Information Service Number PB91-168666--A08

- Probability Based Inspection Planning for Marine Structures. Prepared by the University of California. National Technical Information Service Number PB94-125853--A04, phone (703) 487-4650
- Shipboard Crew Fatigue, Safety and Reduced Manning. Prepared by Volpe National Transportation Center. National Technical Information Service Number PB91-138099--A06, phone (703) 487-4650
- Worldwide Vessel Locating and Tracking System, Volume 1: Final Report. Prepared by Synetics Corporation. National Technical Information Service Number PB93-193217--A11, phone (703) 487-4650

#### **LABOR, TRAINING, AND SAFETY**

- Information Concerning Employment and Training Opportunities in the U.S. Merchant Marine. Prepared by the Maritime Administration, phone (202) 366-5755
- Marine Fire Protection--Fire Fighting and Fire Safety, January 1980, 388 pages. Prepared by the Maritime Administration, Government Printing Office Stock Number 003-007-000099-5, \$14.00, phone (202) 512-1800
- Maritime Labor-Management Affiliations Guide. Prepared by the Maritime Administration, phone (202) 366-5755

#### **PERSONNEL AND TRAINING**

- Admission Procedures and General Information, United States Merchant Marine Academy, Kings Point, NY, phone (202) 366-5755. Interested Parties may also write to the Office of Labor, Training, and Safety; Maritime Administration; Washington, D.C. 20590 for copies of the admission booklets.

## **PORT AND INTERMODAL DEVELOPMENT**

- An Analysis of U.S. Public Port Profitability and Self-Sufficiency, 1985 to 1994. Prepared by the Maritime Administration, phone (202) 366-4357
- An Assessment of Port, Terminal, and Navigation Impacts Resulting from the 1993 Upper Mississippi River Flood. National Technical Information Service Number PB97-171532--A06, phone (703) 487-4650
- A Report to Congress on the Public Ports of the United States, 1992 to 1993. Prepared by the Maritime Administration, phone (202) 366-4357
- A Shipper's Guide to Stowage of Cargo in Marine Containers. Prepared by the Maritime Administration, phone (202) 366-5807
- Development of an Inland Waterway Information System, Final Report. Prepared by Memphis State University. National Technical Information Service Number PB95-166336--A06, phone (703) 487-4650
- Inventory of American Intermodal Equipment, 1994. Prepared by the Maritime Administration, phone (202) 366-4357
- Maritime Security Report. Prepared by the Maritime Administration, phone (202) 366-4357
- National Port Readiness Network. Prepared by the Maritime Administration, phone (202) 366-4357
- Port Handbook for Estimating Marine Terminal Cargo Handling Capacity. Prepared by Mofatt and Nichols Engineers. National Technical Information Service, phone (703) 487-4650

- Volume I, Executive Summary. National Technical Information Service Number PB87-121133/AS--A03
- Volume II, Main Report. National Technical Information Service Number PB87-121125/AS--A08
- Port Risk Management Guidebook. Prepared by the Maritime Administration, phone (202) 366-4357
- Prevention of Air Pollution from Ships; Characterization and Assessment of Diesel Particulate via Lube Oil Consumption Control. National Technical Information Service Number PB97-172779, phone (703) 487-4650
- Report to Congress on the Status of the Public Ports of the United States. Prepared by the Maritime Administration, phone (202) 366-4357
- Resolution of Land Use and Port Access Conflicts at Inland Waterway Ports. National Technical Information Service Number PB96-188396--A06, phone (703) 487-4650
- The U.S. Stevedoring and Marine Terminal Industry. Prepared by the Maritime Administration, phone (202) 366-4357
- U.S. Port Development Expenditure Survey. Prepared by the Maritime Administration, phone (202) 366-4357



**U.S. NAVY**

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** October 1992 Condition Survey

**Description:**

This file is a condition survey by the Corps of Engineers for the Little Creek navigation channel project. It shows the dredged depths of the entrance channel, the harbor, and the piers.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** April 1995 Condition Survey

**Description:**

This file is a condition survey by the Public Works Center for the Little Creek navigation channel and berthing areas. It shows the dredged depths of the entrance channel, the quaywall, Piers 11 to 15 and their approaches, and Piers 16 North to 19 and their approaches.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** June 1996 Condition Survey

**Description:**

This file is a condition survey by the Public Works Center for the Little Creek navigation channel and berthing areas. It shows the dredged depths of Pier 14 North and its approach areas.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** Spring 1998 Condition Survey

**Description:**

This file is a condition survey by the Public Works Center for the Little Creek navigation channel and berthing areas. It shows the dredged depths of the entrance channel, the quaywall, and the piers.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** Military Construction Project P-100

**Description:**

This file is a report entitled Military Construction Project P-100, Dredge Little Creek Channel, dated May 1995. It proposes the dredging of the harbor and channel to 25 feet, plus 1 foot over dredge.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Environmental Quality Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** M. Connor

**Phone:** (757) 464-7063

**Fax:** (757) 464-7898

**File Name:** Environmental Assessment for Military Construction Project P-100

**Description:**

This file is the Environmental Assessment, dated Spring 1998, for Military Construction Project P-100, Dredge Little Creek Channel.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Environmental Quality Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** K. Greaser

**Phone:** (757) 462-4571

**Fax:** (757) 464-7898

**File Name:** Initial Assessment Study of NAB LCREEK (NEESA 13-066)

**Description:**  
This file is a report entitled Initial Assessment Study of NAB LCREEK (NEESA 13-066), dated December 1984. It provides core samples of Little Creek Cove.



**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** History of Harbor Dredging Events

**Description:**

This file is a report entitled History of Harbor Dredging Events. It identifies critical decision milestones for determining entrance channel depths in support of the LSD-41 class ships.

**Organization:** U.S. Navy  
Little Creek Naval Amphibious Base  
Base Civil Engineers Office  
Planning Office

**Location:** Suite 100  
2600 Tarawa Court  
Norfolk, VA 23521-3229

**Contact:** Al Siegler

**Phone:** (757) 462-4733

**Fax:** (757) 464-7898

**File Name:** NAVPHIBASE LCREEK Dredging History of 1995

**Description:**

This file is a report entitled NAVPHIBASE LCREEK Dredging History of 1995. It provides a chronological listing of dredging events from 1947 to present day, approved maintenance dredging depths, datum plane diagrams, and LANTDIV's 1988 dredging study showing maximum allowable dredge depths at piers and quaywall.

**Organization:** U.S. Navy  
Norfolk Naval Base  
Navy Public Works Center  
Hydrographic Survey Branch (Code 411)  
**Location:** 9742 Maryland Avenue  
Norfolk, VA 23511-3095  
**Contact:** Frank Cole  
**Phone:** (757) 444-3765  
**Fax:** (757) 445-1924

**File Name:** Hydrographic Surveys

**Description:**

The Hydrographic Survey Branch routinely conducts hydrographic surveys to determine bottom configurations at naval harbors and berthing areas in the Hampton Roads area. These surveys are condition surveys used in the preparation of contract documents for dredging contracts. Surveys are also performed immediately before and after dredging operations to monitor dredging contractor performance. Surveys are also made occasionally to detect, locate, and identify submerged objects. Surveys are made at the following locations: (1) Naval Station, Norfolk; (2) Naval Amphibious Base, Little Creek; (3) Norfolk Naval Shipyard; (4) Craney Island Fuel Depot; (5) Naval Weapons Station, Yorktown; and (6) Cheatham Annex.

**Assets:**

Three hydrographic survey boats are based at the Norfolk Naval Base. A 25-foot work-boat, a 24-foot work-boat, and a 20-foot work-boat are all available to perform hydrographic surveys. Differential Global Positioning System, Electronic Range Azimuth, and manual tag line surveys are methods employed in conducting hydrographic surveys.

**Other Products and Services:**

- Prior hydrographic surveys, both paper and digital
- Horizontal and vertical control

**Organization:** U.S. Navy  
Norfolk Naval Shipyard  
Facility Planning (914.3)  
**Location:** Portsmouth, VA 23709-5000  
**Contact:** Chris Ceniccola  
**Phone:** (757) 396-8240  
**Fax:** (757) 396-8233

**File Name:** Hydrographic Surveys

**Description:**

Norfolk Naval Shipyard performs periodic depth sounding in areas such as berths, wet slips, and barge slips to determine if any dredging is required. Data collected during these soundings include: (1) current depth, (2) quantity to be dredged (if necessary), (3) limited information on material composition, and (4) a survey map. Norfolk Naval Shipyard has limited information dating back to 1970's, but little prior to that.

**VIRGINIA DEPARTMENT OF  
ENVIRONMENTAL QUALITY**

**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office

**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462

**Contact:** Roger Everton (Water Quality Monitoring)

**Phone:** (757) 518-2150

**Fax:** (757) 518-2003

**Contact:** Kevin A. Curling (Water Quality Assessments)

**Phone:** (757) 518-2155

**Fax:** (757) 518-2123

**File Name:** Water Quality Monitoring and Water Quality Assessments

**Description:**

The Tidewater Regional Office maintains a network of water quality monitoring sites throughout the region. Several of these sites are located within the Port of Hampton Roads area. These sites are routinely monitored for "conventional" water quality parameters: (1) temperature, (2) salinity, (3) dissolved oxygen, (4) pH, (5) biological oxygen demand, (6) nutrients (nitrogen/phosphorus), (7) solids (residue), and (8) fecal coliform bacteria. All monitoring sites are sampled at least once a quarter; certain areas and sites are sampled monthly. On a variable basis, water samples are also analyzed for metals and certain pesticides/organics (polyaromatic hydrocarbons, polychlorinated biphenyls, etc.). Water samples collected in the Elizabeth River are also analyzed for tributyl tin. Sediment samples are collected at certain sites once every 3 years and are analyzed for metals and organics.

Biological monitoring also occurs within the region. Benthic habitat is monitored and assessed by noting the robustness of the biological community present. The DEQ also maintains a network of fish sampling sites throughout the state where fish are collected and the tissue is analyzed for metals and organics.

All data collected are stored in EPA's STORET database. Access to STORET is through this office or can also be acquired through after-market private sources. Also, every 2 years, the state produces a 305(b) Water Quality Assessment of Virginia's Waters and a 303(d) List of Priority Waters. The DEQ also publishes monitoring data bulletins that report and summarize all data collected.



**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office  
**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462  
**Contact:** Robert F. Jackson  
**Phone:** (757) 518-2113  
**Fax:** (757) 518-2123

**File Name:** Virginia Water Protection Permits

**Description:**

The Virginia Water Protection Permit program is required under Section 401 of the Clean Water Act and was subsequently modified by the State Water Control Law. The State Water Control Law reads in part, "...proposed activity is consistent with the provisions of the Clean Water Act and will protect instream beneficial uses. The preservation...for the purposes of the protection of navigation, maintenance of waste assimilation capacity, the protection of fish and wildlife resources and habitat, recreation, cultural and aesthetic values is a beneficial use of Virginia's waters."

Activities that are regulated by the Virginia Water Protection Permit program include, but are not limited to: (1) dredging, (2) impoundments, (3) structures in surface waters, (4) water supply intakes, (5) marinas, (6) channels, and (7) hydraulic modifications. Specific cases of these activities could be the following: (1) private piers and wharves, (2) boathouse marinas, (3) dolphin/mooring piles, (4) boat ramps, (5) bulkheads/riprap and associated backfill, (6) fill, (7) marsh stabilization, (8) dredging/excavating, (9) groins/jetties/breakwaters, (10) beach nourishment, (11) intake/outfall structures, (12) channel modifications, (13) impoundments/dams, (14) utility crossings, and (15) road crossings. All Virginia Water Protection Permit information is entered and stored in the DEQ's Comprehensive Environmental Data System.

**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office  
**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462  
**Contact:** Bob Goode  
**Phone:** (757) 518-2110  
**Fax:** (757) 518-2123

**File Name:** Point Source Control Programs

**Description:**

The discharge of pollutants from point sources is controlled by the Virginia Pollution Discharge Elimination System Permit Program, the Toxic Management Program, and the Pretreatment Program. The Virginia Pollution Abatement Program addresses facilities that handle waste or wastewaters but do not discharge to state waters. These programs were established and are designed to monitor and limit the discharge of conventional and toxic pollutants into state waters. Compliance with designated permit limits or monitoring requirements is tracked by the Compliance Auditing System, which is administered by the DEQ's Office of Enforcement. All point source permit information is entered and stored in the DEQ's Comprehensive Environmental Data System.

**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office

**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462

**Contact:** Dave Borton

**Phone:** (757) 518-2118

**Fax:** (757) 518-2009

**File Name:** Groundwater Protection Programs

**Description:**

Groundwater in Virginia is protected and maintained by several programs. These include Ground Water Quality Monitoring, Underground Water Withdrawal Permit Program, Underground Storage Tank Program, Above Ground Storage Tank Program, and the Leaking Underground Storage Tank Program. These programs are designed to regulate the listed types of facilities. Regulations provide for groundwater monitoring, leak detection, inspection, spill control, and remediation of pollutant leaks. All groundwater information is entered and stored in the DEQ's updated Comprehensive Environmental Data System.

**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office

**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462

**Contact:** Harold Winer

**Phone:** (757) 518-2153

**Fax:** (757) 518-2003

**File Name:** Solid and Hazardous Waste Program

**Description:**

Solid and hazardous wastes are regulated under the Federal Resource Conservation and Recovery Act, Comprehensive Environmental Response Compensation and Liability Act, and the Virginia Waste Management Act. These regulations require permits for the transportation, storage, treatment, and disposal of hazardous wastes. All solid and hazardous waste information is entered and stored in the DEQ's updated Comprehensive Environmental Data System.

**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office  
**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462  
**Contact:** Jane Workman  
**Phone:** (757) 518-2112  
**Fax:** (757) 518-2123

**File Name:** Air Pollution Control Program

**Description:**

The release of air pollutants is regulated under the Clean Air Act and the Virginia Air Pollution Control Law. The Virginia Air Pollution Control Law includes several issues not addressed by the Clean Air Act. These issues include opacity concerns, sources of dust, and odorous emissions. Programs administered by the DEQ include the Existing Sources Registration and Standards, New or Modified Source Construction Permit, Prevention of Significant Deterioration Permit, and Operating Permit (Federal Title V operating permit). All air pollution control information is entered and stored in the DEQ's updated Comprehensive Environmental Data System.

**Organization:** Virginia Department of Environmental Quality  
Tidewater Regional Office  
**Location:** 5636 Southern Boulevard  
Virginia Beach, VA 23462  
**Contact:** Kerita Kegler  
**Phone:** (757) 518-2180  
**Fax:** (757) 518-2003  
**24 Hour Hot Line:** (757) 518-2077

**File Name:** Pollution Response Program

**Description:**

The Pollution Response Program responds to and investigates pollution complaints. Pollution Response Program personnel are involved in overseeing pollution clean ups. All Pollution Response Program information is entered and stored in the DEQ's updated Comprehensive Environmental Data System.

**VIRGINIA DEPARTMENT OF  
HISTORIC RESOURCES**

**Organization:** Virginia Department of Historic Resources  
**Location:** 2801 Kensington Avenue  
Richmond, VA 23221  
**Contact:** Suzanne Durham  
**Phone:** (804) 367-2323, extension 124  
**Fax:** (804) 367-2391

**File Name:** Archaeological and Historical Site Files

**Description:**

The files for all archaeological and historical sites in the Commonwealth of Virginia are maintained by this department. Quadrangle maps (7.5 minute series, 1:24,000 scale) show the location of the sites, and information on the sites is kept in individual site file folders. The agency has a listing of state properties on the National Register of Historic Places and those found eligible for such listing. Information on each archaeological site includes some or all of the following:

- Name
- Number
- Type
- Cultural affiliation
- Location
- Owner of site
- Name of surveyor
- Date of survey
- General site surroundings including nearest body of water
- Description of site including dimensions
- Specimens collected
- Current site condition
- Recommendations
- Drawing of the site



Information on historical sites contains some or all of the following items:

- Number
- Location
- Date of construction
- Architectural style
- Construction and cladding material
- Roof type and material
- Roof and porch descriptions
- Major additions and alterations
- Landscape features
- Significance of the structure
- Sketch of the site plan
- Pertinent historical information
- Photographs

**VIRGINIA INSTITUTE OF MARINE  
SCIENCE**

**Organization:** Virginia Institute of Marine Science  
Department of Physical Sciences  
**Location:** Greate Road  
Route 1208  
Gloucester Point, VA 23602  
**Contact:** Dr. John D. Boon  
**Phone:** (804) 684-7272  
**Fax:** (804) 684-7250

**Description:**

The Virginia Institute of Marine Science has published numerous reports concerning the physical environment in the Port of Hampton Roads and vicinity. Most of these studies involved the collection of field data. Certain data sets have been archived and are available upon request. These reports are listed as follows by category:

**BIOTOXICITY**

- Bender, M.E. and R.J. Huggett. 1989. Polynuclear aromatic hydrocarbon residues in shellfish: species variations and apparent intraspecific difference. In: Cancer Growth and Progression, (Editor) Hans E. Kaiser, Kluwer Academic Publishers. Pages 226 to 234.
- Bieri, R.H., C. Hein, R.J. Huggett, P. Chou, H. Slone, C.L. Smith, and C.W. Su. 1986. Polycyclic Aromatic Hydrocarbons in Surface Sediments for the Elizabeth River Subestuary. International Journal of Environmental Analytical Chemistry. 26:97 to 26:113.
- Espourteille, F.A., J. Greaves, and R.J. Huggett. 1993. Measurement of tributyltin contamination of sediments and *Crassostrea virginica* in the Chesapeake Bay. Environmental Toxicology and Chemistry 12:305 to 12:314.

- Faisal, M. and R.J. Huggett. 1993. Effects of polycyclic aromatic hydrocarbons on the lymphocyte mitogenic responses in spot, *Leiostomus xanthurus*. *Marine Environmental Research*. 35:121 to 35:124.
- Faisal, M., B.A. Weeks, W.K. Vogelbein, and R.J. Huggett. 1991. Evidence of aberration of the natural cytotoxic cell activity in *Fundulus heteroclitus* (Pisces: Cyprinodontidae) from the Elizabeth River, Virginia. *Veterinary Immunology and Immunopathology*. 29:339 to 29:351.
- Faisal, M., M.S.M. Marzouk, C.L. Smith, and R.J. Huggett. 1991. Mitogen induced proliferative responses of lymphocytes from spot (*Leiostomus xanthurus*) exposed to polycyclic aromatic hydrocarbon contaminated environments. *Immunopharmacology and Immunotoxicology*. 13(3):311 to 327.
- Greaves, J. 1990. Elizabeth River long-term monitoring program-phase 1. 1989. Analysis of Organic Pollutants in Sediments and Blue Crab (*Callinectes sapidus*) Tissues. Final Report: Virginia State Water Control Board, Richmond, Virginia. 222 pages.
- Hargis, W.J., Jr. and D.E. Zwerner. 1984. Effects of contaminated sediments and sediment-exposed effluent water on an estuarine fish: Acute toxicity. *Marine Environmental Research*. 14:337 to 14:354.
- Huggett, R.J., M.E. Bender, and M.A. Unger. 1987. Polynuclear aromatic hydrocarbons in the Elizabeth River, Virginia. In: *Fate and Effects of Sediment-Bound Chemicals in Aquatic Systems*. Edited by K.L. Dickson, A.W. Maki, and W.A. Brungs. Pergamon Press. New York. 449 pages.
- Mothershead, II, R.F. and R.C. Hale. 1992. Influence of ecdysis on the accumulation of polycyclic aromatic hydrocarbons in field exposed blue crabs (*Callinectes sapidus*). *Marine Environmental Research*. 33:145 to 33:156.

- Roberts, M.H., M.A. Unger, and R.E. Croonenberghs. 1996. Body burden of polycyclic aromatic hydrocarbons and tributyltin in hard clams (*Mercenaria mercenaria*) from the Elizabeth River, Virginia. Final report to Virginia Commission of Marine Resources. 18 pages.
- Sami, S., M. Faisal, and R.J. Huggett. 1992. Alterations in cytometric characteristics of hemocytes from the American oyster *Crassostrea virginica* exposed to a polycyclic aromatic hydrocarbon (PAH) contaminated environment. *Marine Biology*. 113:247 to 113:252.
- Sami, S., M. Faisal, and R.J. Huggett. 1993. Effects of laboratory exposure to sediments contaminated with polycyclic aromatic hydrocarbons on the hemocytes of the American oyster *Crassostrea virginica*. *Marine Environmental Research*. 35:131 to 35:135.
- Unger, M.A., E.T. Travelstead, and G.G. Vadas. 1995. Measurement of trends in tributyltin concentrations in Virginia shellfish: An assessment of the effectiveness of tributyltin legislation. Final Report. Virginia Environmental Endowment, Richmond, Virginia, 13 pages.
- Unger, M.A., W.G. MacIntyre, and R.J. Huggett. 1988. Sorption behavior of tributyltin on estuarine and freshwater sediments. *Environmental Toxicology and Chemistry*: Pages 907 to 915.
- Van Veld, P.A., D.J. Westbrook, B.R. Woodin, R.C. Hale, C.L. Smith, R.J. Huggett, and J.J. Stegeman. 1990. Induced cytochrome P-450 in intestine and liver of spot (*Leiostomus xanthurus*) from a polycyclic aromatic hydrocarbon contaminated environment. *Aquatic Toxicology*. 17:119 to 17:132.
- Van Veld, P.A., W.K. Vogelbein, R. Smolowitz, B.R. Woodin, and J.J. Stegeman. 1992. Cytochrome P450IA1 in hepatic lesions of a teleost fish (*Fundulus*

*heteroclutus*) collected from a polycyclic aromatic hydrocarbon-contaminated site. Carcinogenesis. 13(3):505 to 507.

- Vogelbein, W.K., D.E. Zwerner, M.A. Unger, C.L. Smith, and J.W. Fournie. 1997. Hepatic and extra-hepatic neoplasms in a teleost fish from a polycyclic aromatic hydrocarbon contaminated habitat in Chesapeake Bay, USA. In: Rossi L., R. Richardson, and J. Harshbarger. Spontaneous Animal Tumors: A Survey. Pages 55 to 64.
- Warinner, J.E., E.S. Mathews, and B.A. Weeks. 1988. Preliminary investigations of the chemiluminescent response in normal and pollutant-exposed fish. Marine Environmental Research. 24:281 to 24:284.
- Weeks, B.A. and J.E. Warinner. 1984. Effects of toxic chemicals on macrophage phagocytosis in two estuarine fishes. Marine Environmental Research. 14:327 to 14:335.
- Weeks, B.A. and J.E. Warinner. 1986. Functional evaluation of macrophages in fish from a polluted estuary. Veterinary Immunology and Immunopathology. 12:313 to 12:320.
- Weeks, B.A., A.S. Keisler, J.E. Warinner, and E.S. Mathews. 1987. Preliminary evaluation of macrophage pinocytosis as a technique to monitor fish health. Marine Environmental Research. 22:205 to 22:213.
- Weeks, B.A., J.E. Warinner, P.L. Mason, and D.S. McGinnis. Influence of toxic chemicals on the chemotactic response of fish macrophages. Journal Fish Biology. 28:653 to 28:658.

- Weeks, B.A., R.J. Huggett, J.E. Warinner, and E.S. Mathews. 1990. Macrophase responses of estuarine fish as bioindicators of toxic contamination. Chapter 10. In: Biomarkers of Environmental Contamination, (Editors) J.F. McCarthy and L.R. Shugart. Lewis Publishers. Pages 193 to 201.
- Williams, C.D., M. Faisal, and R.J. Huggett. 1992. Polynuclear aromatic hydrocarbons and fish lens cataract: Effects of benzo[a]pyrene-7,8-dihydrodiol on the macromolecular synthesis of cultured eye cells. Marine Environmental Research. 34:333 to 34:337.

### **COMMERCIAL SHELLFISH, FINFISH, AND BENTHIC ORGANISMS**

- Haven, D. S. and P. Kendall. 1975. A survey of commercial shellfish in the vicinity of Newport News Point and Pig Point in the lower James River, 1974; Volume 4 in: *Studies for a Proposed Nansemond River Sewage Treatment Plant*. Report to McGaughy, Marshall and McMillan-Hazen and Sawyer. 30 pages.
- Haven, D.S., R. Morales-Alamo, and W.I. Priest. 1981. Oyster and hard clam distribution and abundance in Hampton Roads and the lower James River. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)
- Hedgepeth, M.Y., J.V. Merriner, and F. Wojcik. 1981. Nekton utilization of aquatic resources in the Elizabeth River and the lower James River. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)

- Mann, R. and D.A. Evans. 1998. Estimation of oyster, *Crassostrea Virginica*, stranding stock, larval production and advective loss in relation to observed recruitment in the James River, Virginia. *Journal of Shellfish Research* (submitted).
- Priest, W.I. 1981. Spawning activity and nursery utilization by fishes in Hampton Roads and its tributaries. In: *A Study of Dredging Effect in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)
- Schaffner, L.C. and R.J. Diaz. 1988. Distribution and abundance of overwintering blue crabs, *Callinectes sapidus*, in the lower Chesapeake Bay. *Estuaries*. 11:68 to 11:72.
- Schaffner, L.C., R.J. Diaz, and I.L. Larsen. 1987. Faunal characteristics and sediment Accumulation processes in the James River estuary, Virginia. *Estuarine, Coastal and Shelf Science*. 25:211 to 25:226.

## CONTAMINANTS IN SEDIMENTS

- Nichols, M.M. 1982. Metal inventory and fate of suspended sediment in Chesapeake Bay. *Special Scientific Report Number 106*, Virginia Institute of Marine Science, Gloucester Point, Virginia. 97 pages.
- Nichols, M.M. 1986. Consequences of sediment flux: escape or entrapment. *Rapports et Proces - Verbaux des Reunions Conseil International Pour L'Exploration de la Mer*. 186:343 to 186:351. (Virginia Institute of Marine Science Contribution Number 1324.)
- Nichols, M.M.. 1993. Response of coastal plain estuaries to episodic events in the Chesapeake Bay region. In: *Nearshore and Estuarine Cohesive Sediment Transport*.



American Geological Union, Coastal and Estuarine Studies, Volume 42. A.J. Mehta (Editor).

- Nichols, M.M. 1995. Response of estuaries to storms in the Chesapeake Bay region. In: *Changes in Fluxes in Estuaries*, Dyer, K.R. and R.J. Orth (Editors), Fredensborg, Denmark.
- Nichols, M.M. and M.K. Howard-Strobel. 1986. Man's physical effects on the Elizabeth River. In: Kuo, A.Y. and T.M. Younos (Editors), *Effects of Upland and Shoreline Use on the Chesapeake Bay*, Proceedings of the Chesapeake Bay Research Conference, Williamsburg, Virginia. (Virginia Institute of Marine Science Contribution Number 1325.)
- Nichols, M.M. and M.K. Howard-Strobel. 1991. Evolution of an urban estuarine harbor: Norfolk, Virginia. *Journal of Coastal Research*. 7:745 to 7:757.
- Olsen, C.R., I.L. Larsen, P.J. Mulholland, K.L. Von Damm, J.M. Grebmeier, L.C. Schaffner, R.J. Diaz, and M.M. Nichols. 1993. The concept of an equilibrium surface applied to particle sources and contaminant distributions in estuarine sediments. *Estuaries*. 16:3B.

## **EFFECTS OF DREDGING**

- Kuo, A.Y. and D.F. Hayes. 1991. Model for turbidity plume induced by bucket dredge, 1991. *Journal of Waterway, Port, Coastal and Ocean Engineering*. 117:610 to 117:623.
- Kuo, A.Y. and J.P. Jacobson. 1975. A model for predicting the pollutant distribution from an outfall in a tidal estuary. Volume 5 in: *Studies for a Proposed Nansemond River Sewage Treatment Plant*. Report to McGaughy, Marshall and McMillan-Hazen and Sawyer. 79 pages.

- Kuo, A. Y. and R. J. Lukens. 1981. A model for Dredge-induced turbidity. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)
- Kuo, A.Y., C.S. Welch, and R.J. Lukens. 1985. A dredge induced turbidity plume model. *Journal of Waterway, Port, Coastal and Ocean Engineering*. 111:476 to 111:494.
- Kuo, A.Y., J.M. Hamrick, and G.M. Sisson. 1990. Persistence of residual currents in the James River estuary and its implication to mass transport. In: Cheng, R.T., (Editor). *Residual Currents and Long-term Transport*. Pages 389 to 401.
- Munday, J.C., H.H. Gordon, and C.J. Alston. 1981. Elizabeth River surface circulation atlas. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)
- Priest, W.I. 1981. The effects of dredging on water quality and estuarine organisms. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)
- Welsh, C.S. 1981. Near bottom currents in the lower James and Elizabeth Rivers. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)

- Welsh, C.S., R.J. Lukens, and A.Y. Kuo. 1981. Suspended sediment experiment and model calibration. In: *A Study of Dredging Effects in Hampton Roads, Virginia*, W.I. Priest (Editor), Virginia Institute of Marine Science, Special Report in Applied Marine Science Number 247. 265 pages. (Final Contract Report prepared for Army Corps of Engineers, Norfolk District.)

## **ESTUARINE CIRCULATION, OBSERVATIONS, AND MODELING**

- Brubaker, J.M. 1995. Field study of currents at Norfolk Naval Shipyard, Portsmouth, Virginia. Report to SCS Engineers, Reston, Virginia. Contract Number N62470-92-D-6450.
- Brubaker, J.M. and J.H. Simpson. 1998. Flow convergence and stability at a tidal estuarine front: acoustic Doppler current observations. *Journal of Geophysical Research* (submitted).
- Hamrick, J.M. 1992. A three-dimensional environmental fluid dynamics computer code: theoretical and computational aspects. Special Report Number 317 in Applied Marine Science and Ocean Engineering, Virginia Institute of Marine Science. 63 pages.
- Kuo, A.Y. and K. Park. 1995. A framework for coupling shoals and shallow embayments with main channels in numerical modeling of coastal plain estuaries. *Estuaries*: 18.
- Kuo, A.Y., R.J. Byrne, J.M. Brubaker, and J.H. Posenau. 1988. Vertical transport across an estuary front. In: *Physical Processes in Estuaries*, J. Dronkers and W. van Leussen, (Editors). Springer Verlag, Berlin. Pages 93 to 109.
- Kuo, A.Y., R.J. Byrne, P.V. Hyer, E.P. Ruzecki, and J.M. Brubaker. 1990. Practical application of theory for tidal intrusion fronts. *Journal of Waterway, Port, Coastal, and Ocean Engineering*. 116:3, pages 341 to 361.

- Neilson, B. and M. Boule. 1975. An analysis of currents and circulation in Hampton Roads, Virginia. Volume 2 in: *Studies for a Proposed Nansemond River Sewage Treatment Plant*. Report to McGaughy, Marshall and McMillan-Hazen and Sawyer. 98 pages.
- Shen, J., J.D. Boon, and G.M. Sisson. 1997. Hydrodynamic model HEM-3D: clam larval dispersions, James River. Report to Virginia Marine Resources Commission, Plans and Statistics Department. 14 pages.

## **STORM SURGE**

- Boon, J.D., C.S. Welch, H.S. Chen, R.J. Lukens, C.S. Fang. 1978. Storm surge height-frequency analysis. Volume I in: *A Storm Surge Model Study, Report to the Federal Insurance Administration, Department of Housing and Urban Development*, Virginia Institute of Marine Science, Special Report in Applied Marine Science and Ocean Engineering Number 189. 155 pages.

## **WATER QUALITY MONITORING AND MODELING**

- Cerco, C.F. and A.Y. Kuo. 1981. Real-time water quality model of the Elizabeth River system. Virginia Institute of Marine Science, Special Report in Applied Marine Science and Ocean Engineering, Number 215. 105 pages. (Water quality modeling: salinity, dissolved oxygen, nutrients, chlorophyll.)
- Fang, C.S., C.S. Welch, and H.H. Gordon. 1975. A surface circulation study in middle Elizabeth River. A report to NUS Corporation, Virginia Institute of Marine Science, Appendices. 66 pages. (Drift marker investigation in area around Lamberts Point.)
- Kuo, A.Y. and B.J. Neilson. 1988. A modified tidal prism model for water quality in small coastal embayments. *Water Science and Technology*. 20:133 to 20:142.

- Neilson, B. 1975. A water quality study of the Elizabeth River: The effects of the Army base and Lamberts Point STP effluents. Virginia Institute of Marine Science, Special Report in Applied Marine Science and Ocean Engineering Number 75. 133 pages. (Water quality, pollutant flushing, and dispersion.)
- Neilson, B., M.B. Bender, F.D. Perkins, and M. Rhodes. 1975. Water quality monitoring of Hampton Roads and the Nansemond River: Summer, 1974; Volume 3 in: Studies for a Proposed Nansemond River Sewage Treatment Plant. Report to McGaughy, Marshall and McMillan-Hazen and Sawyer. 129 pages.
- Park, K. and A.Y. Kuo. 1993. A vertical two-dimensional model of estuarine hydrodynamics and water quality. Virginia Institute of Marine Science, Special Report in Applied Science and Ocean Engineering Number 321, three appendices. 47 pages.

## WAVES

- Boon, J.D. 1995. Directional wave observations, Thimble Shoal Light, September 19, 1994 to March 13, 1995. Unpublished Virginia Institute of Marine Science Data Report, Appendix. 13 pages.
- Boon, J.D. and D.A. Hepworth. 1993. Directional wave observations, Thimble Shoal Channel entrance and Thimble Shoal light, January 15 to June 2, 1993. Unpublished Virginia Institute of Marine Science Data Report, Appendix. 40 pages.
- Boon, J.D., D.A. Hepworth, K.D. Suh, and F.H. Farmer. 1993. Chesapeake Bay wave Climate-Thimble Shoal wave station, report and summary of wave observations, October 8, 1990 through August 22, 1991. Virginia Institute of Marine Science Data Report Number 44, January 1993.
- Boon, J.D., S.M. Kimball, K.D. Suh, and D.A. Hepworth. 1990. Chesapeake Bay wave climate, Thimble Shoal wave station, report and summary of wave

observations, September 27, 1988 through October 17, 1989. Virginia Institute of Marine Science Data Report Number 32. 38 pages plus Appendices.

# **VIRGINIA MARINE RESOURCES COMMISSION**

**Organization:** Virginia Marine Resources Commission

**Location:** P. O. Box 756  
2600 Washington Avenue  
Newport News, Virginia 23607

**Contact:** Jim Wesson

**Phone:** (757) 247-2200

**Fax:** (757) 247-8062

**File Name:** Conservation and Replenishment Division Information

**Description:**

The Conservation and Replenishment Division is tasked with the management and replenishment of the public oyster grounds in Virginia. The Division Chief with the assistance of an Advisory Committee develops strategies to improve and restore the public oyster grounds. Restoration activities include the spreading of cultch as oyster setting substrate, rejuvenating of old oyster beds using dredges, creating of oyster reefs for optimal oyster habitat, and the moving of oysters from seed areas to grow-out areas. The Division systematically and scientifically monitors all the restoration activities to determine their success.



**Organization:** Virginia Marine Resources Commission

**Location:** P. O. Box 756  
2600 Washington Avenue  
Newport News, Virginia 23607

**Contact:** Gerry Showalter

**Phone:** (757) 247-2200

**Fax:** (757) 247-8062

**File Name:** Engineering/Surveying Department Shellfish Lease Information

**Description:**

The Engineering/Surveying Department is responsible for surveying and mapping subaqueous ground for public and private shellfish cultivation, leasing private shellfish grounds, and maintaining oyster ground lease records. This includes the accounting for work performed and the annual rent accounting of the leased oyster ground, the platting, and composite mapping of these parcels and the adjacent waters. The department is responsible over 250,000 acres of public ground and 102,000 acres of private ground, and it processes and surveys requests for new leases and transfers of current leases. In cases of disputed claims, the department weighs all available information in making recommendations to the division head for presentation to the Commission.

**Organization:** Virginia Marine Resources Commission  
**Location:** P. O. Box 756  
2600 Washington Avenue  
Newport News, Virginia 23607  
**Contact:** Roy Insley  
**Phone:** (757) 247-2200  
**Fax:** (757) 247-8062  
  
**File Name:** Fisheries Management Division, Plans and Statistics Department  
Information

**Description:**

The Division's Fisheries Plans and Statistics Department monitors Virginia's finfish and shellfish fisheries and provides this information for management purposes. Fishermen report daily harvest to the Division on a monthly basis. Oyster data are gathered from a mandatory Oyster Tax and Harvest Reporting system. These data are entered into computers in the Plans/Statistics office where they can be quickly sorted and retrieved to help in decision making or to respond to data requests from individuals, universities, or other resource management agencies. The Plans/Statistics staff has developed many computer databases for the Marine Fisheries Statistics System and is participating in the setting up of the Federal Northeast Marine Fisheries Information System.

The Plans/Statistics section is also responsible for the development of fisheries management plans, which provide strategic, long-term management recommendations for Virginia's marine fish species. The criteria for setting priorities for fishery management plan development are status of the stock, status of knowledge of the species, and landings volume and value. These plans are based on the best biological and socioeconomic information available.

**Organization:** Virginia Marine Resources Commission

**Location:** P. O. Box 756  
2600 Washington Avenue  
Newport News, Virginia 23607

**Contact:** Tony Watkinson

**Phone:** (757) 247-2200

**Fax:** (757) 247-8062

**File Name:** Individual Habitat Management Division Permit Files

**Description:**

Individual permit files for projects involving encroachment over state-owned submerged lands, tidal wetlands, and coastal primary sand dunes within Hampton Roads. Information available related to permit review includes Wetlands Guidelines, Subaqueous Guidelines, Coastal Primary Sand Dune Guidelines, and Laws of Virginia related to Submerged Lands, Wetlands, and Coastal Primary Sand Dunes. Also available is the Local, State, Federal Joint Permit Application.

# **HAMPTON ROADS PLANNING DISTRICT COMMISSION**

**Organization:** Hampton Roads Planning District Commission

**Location:** 723 Woodlake Drive  
Chesapeake, VA 23320

**Contact:** John W. Whaley

**Phone:** (757) 420-8300

**Fax:** (757) 523-4881

**File Name:** Hampton Roads Data Book

**Description:**

This is an annual publication containing comprehensive documentation of economic data, including time series data, on the Hampton Roads area. The report is maintained in hard copy and electronic format. It contains numerous "Excel" spreadsheets.

**Organization:** Hampton Roads Planning District Commission

**Location:** 723 Woodlake Drive  
Chesapeake, VA 23320

**Contact:** John M. Carlock

**Phone:** (757) 420-8300

**Fax:** (757) 523-4881

**File Name:** Regional Shoreline Study

**Description:**

This study includes a comprehensive inventory of shoreline conditions (erosion control and access structures), as well as aquatic resources, throughout the Hampton Roads area. All waterbodies in the region are included. It is maintained as a hard copy report (text, tabular data, and maps), hard copy (one of a kind) maps, and low altitude oblique videography.

**Organization:** Hampton Roads Planning District Commission

**Location:** 723 Woodlake Drive  
Chesapeake, VA 23320

**Contact:** John M. Carlock

**Phone:** (757) 420-8300

**Fax:** (757) 523-4881

**File Name:** Managing Multiple Recreational Use Conflicts in the Waters of  
Hampton Roads

**Description:**

This study, the first of its kind in Virginia's Coastal Resource Management Program, addresses recreational and commercial boating uses in the waterways of Hampton Roads and the conflicts they impose on one another in terms of safety, on other recreational uses, on natural resources and riparian property. The study examines the existing management framework to deal with water use conflicts and presents a methodology to develop a water use management plan. Using this methodology, the study developed pilot waterway management plans for the Hampton River and the Lynnhaven River.

**Organization:** Hampton Roads Planning District Commission

**Location:** 723 Woodlake Drive  
Chesapeake, VA 23320

**Contact:** Dwight L. Farmer or John Crosby

**Phone:** (757) 420-8300

**Fax:** (757) 523-4881

**File Name:** Third Crossing Study

**Description:**

This study evaluates alternatives for the third crossing of Hampton Roads and is available on CD ROM.



**Organization:** Hampton Roads Planning District Commission

**Location:** 723 Woodlake Drive  
Chesapeake, VA 23320

**Contact:** Robert C. Jacobs

**Phone:** (757) 420-8300

**Fax:** (757) 523-4881

**File Name:** Aerial Photography

**Description:**

The Commission maintains a comprehensive collection of aerial photography covering the period from 1970 to the present, in 5-year increments. Also, partial coverage of the region is available from approximately 1960. Most are 1:12000 scale. The photos are maintained as black and white contact prints.

# **CITY OF NORFOLK**

**Organization:** City of Norfolk  
Department of Information Systems

**Location:** Suite 300  
401 Monticello Avenue  
Norfolk, VA 23510-2408

**Contact:** Charles M. Ragland, GIS Administrator

**Phone:** (757) 664-4500/Voice mail message (757) 664-4557

**Fax:** (757) 664-4567

**File Name:** Geographic Information System Bureau

**Description:**

The City of Norfolk's Geographic Information System Bureau maintains digital map coverages of the entire City, including Federal, state, and local government map data. Map data is in the form of parcel, planimetric (man-made features), and topographic (including hydrographic and shoreline data) coverages. In addition, the Bureau maintains a library of aerial photographs from 1993, 1996, and 1999. Photos from 1993 and 1996 are contact prints; photos from 1999 are rectified orthophotographs in a geo-referenced, digital format.

**TABLE E-4. INTERNET SITES OF  
INTEREST**

Table E-4. INTERNET SITES OF INTEREST, THE PORT OF HAMPTON ROADS  
AND VICINITY

Internet address	Description
• <a href="http://gis.usace.army.mil/">http://gis.usace.army.mil/</a>	The home page for the Corps of Engineers Geospatial Data and Systems Program
• <a href="http://hlnet.wes.army.mil/library/glossary/">http://hlnet.wes.army.mil/library/glossary/</a>	A glossary of hydraulic terms from the Corps of Engineers Waterways Experiment Station, Coastal and Hydraulics Laboratory
• <a href="http://ptolemy.gis.virginia.edu/gicdoc/mapper/tigermap.html">http://ptolemy.gis.virginia.edu/gicdoc/mapper/tigermap.html</a>	The University of Virginia Library Geographic Information Center Interactive Spatial Data Browser
• <a href="http://www.deq.state.va.us/~dcr/sw/pubbeach.htm">http://www.deq.state.va.us/~dcr/sw/pubbeach.htm</a>	Information on Virginia's Public Beach Program
• <a href="http://www.deq.state.va.us/info/">http://www.deq.state.va.us/info/</a>	The home page for the DEQ
• <a href="http://www.deq.state.va.us/permits/watperm.html">http://www.deq.state.va.us/permits/watperm.html</a>	A discussion of the various water permits handled by the DEQ
• <a href="http://www.hal-pc.org/~nugent/port.html">http://www.hal-pc.org/~nugent/port.html</a>	A listing of Internet links to various ports and terminals throughout the world that can provide information on vessel traffic and type of cargo handled
• <a href="http://www.ntis.gov/index.html">http://www.ntis.gov/index.html</a>	A listing of scientific, technical, engineering, and related business information documents for sale by the National Technical Information Service

Table E-4. INTERNET SITES OF INTEREST, THE PORT OF HAMPTON ROADS  
AND VICINITY  
(Cont'd)

Internet address	Description
• <a href="http://www.opsd.nos.noaa.gov/">http://www.opsd.nos.noaa.gov/</a>	The home page for the National Oceanic and Atmospheric Administration's Center for Operational Oceanographic Products and Services, which includes its Physical Oceanographic Real-Time System (PORTS)
• <a href="http://www.opsd.nos.noaa.gov/tideglos.html">http://www.opsd.nos.noaa.gov/tideglos.html</a>	A glossary of tide and current terms from the National Oceanic and Atmospheric Administration's Center for Operational Oceanographic Products and Services
• <a href="http://www.port-net.com">http://www.port-net.com</a>	The home page for the Hampton Roads Maritime Associations' PortNet system
• <a href="http://www.portofhamptonroads.com">http://www.portofhamptonroads.com</a>	The home page for the Hampton Roads Maritime Association
• <a href="http://www.seaportsinfo.com/portmenu.html">http://www.seaportsinfo.com/portmenu.html</a>	The home page for seaports of the Americas
• <a href="http://www.usace.army.mil/inet/functions/cw/cecwa/branches/legislative/leginfo.htm">http://www.usace.army.mil/inet/functions/cw/cecwa/branches/legislative/leginfo.htm</a>	A listing of legislative information concerning civil works activities conducted by the Corps of Engineers
• <a href="http://www.usace.army.mil/inet/functions/cw/index2.mil">http://www.usace.army.mil/inet/functions/cw/index2.mil</a>	The home page for the Corps of Engineers Directorate of Civil Works
• <a href="http://www.vims.edu/">http://www.vims.edu/</a>	The home page for the Virginia Institute of Marine Science
• <a href="http://www.wrsc.usace.army.mil/ndc/">http://www.wrsc.usace.army.mil/ndc/</a>	The home page for the Corps of Engineers Navigation Data Center

Table E-4. INTERNET SITES OF INTEREST, THE PORT OF HAMPTON ROADS  
AND VICINITY  
(Cont'd)

Internet address	Description
<ul style="list-style-type: none"> <li>• <a href="http://www.wrsc.usace.army.mil/ndc/dredge.htm">http://www.wrsc.usace.army.mil/ndc/dredge.htm</a></li> </ul>	<p>Information on the Corps of Engineers dredging program, including a listing of currently scheduled dredging projects</p>

# **APPENDIX F**

## **MAILING LIST**



---

## APPENDIX F

### MAILING LIST

---

Honorable John W. Warner  
United States Senator  
Attn: Mr. Stricker C. Sanford, IV  
Suite 4900  
World Trade Center  
Norfolk, VA 23510-1630

Honorable Herbert H. Bateman  
Representative in Congress  
Suite 803  
739 Thimble Shoal Boulevard  
Newport News, VA 23606

Honorable Bobby Scott  
Representative in Congress  
Suite 1010  
2600 Washington Avenue  
Newport News, VA 23607

CAPT John Schrinner  
Captain of the Port  
Marine Safety Office  
U.S. Coast Guard  
200 Granby Street, Suite 700  
Norfolk, VA 23510

LTJG Connie Rooke  
Planning and Preparedness Staff  
Marine Safety Office  
U.S. Coast Guard  
200 Granby Street, Suite 700  
Norfolk, VA 23510

Honorable Charles S. Robb  
United States Senator  
Attn: Ms. Bobbie T. Spear  
Suite 107, Dominion Tower  
999 Waterside Drive  
Norfolk, VA 23510

Honorable Owen B. Pickett  
Representative in Congress  
Attn: Mr. Cliff Hicks  
Suite L  
3841 East Little Creek Road  
Norfolk, VA 23518

Honorable Norman Sisisky  
Representative in Congress  
Suite 204  
Bristol Square I  
309 County Street  
Portsmouth, VA 23704

LT Larry Greene, Ph.D.  
Chief, Port Safety and Security  
Marine Safety Office  
U.S. Coast Guard  
200 Granby Street, Suite 700  
Norfolk, VA 23510

Commander (AOWW)  
U.S. Coast Guard Atlantic Area  
Attn: Mr. John R. Walters  
Ch, Waterways Management Sec.  
431 Crawford Street  
Portsmouth, VA 23704

Mr. Roy E. Denmark, Jr., Chief  
Environ. Plng and Assessment Sec.  
U.S. Environ. Protection Agency,  
Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029

Mr. William M. Hester  
Fish and Wildlife Biologist  
Ecological Services  
U.S. Fish and Wildlife Service  
6669 Short Lane  
Gloucester, VA 23061

Mr. Willie Barnes  
Region Environmental Programs  
Maritime Admin., S Atlntc Region  
Room 211, Building 4D  
7737 Hampton Boulevard  
Norfolk, VA 23505

Ms. Ella Thomas  
Maritime Administration  
U.S. Department of Transportation  
Room 7219, MAR-240  
400 7th Street, SW  
Washington, DC 20590

Mr. Timothy E. Goodger, Assistant  
Coordinator, Habitat & Protected  
Resources Division, Oxford Lab.  
National Marine Fisheries Service  
904 South Morris Street  
Oxford, MD 21654

Mr. James C. Dixon  
National PORTS Outreach Manager  
National Oceanic and Atmospheric  
Administration  
808 Principal Court  
Chesapeake, VA 23320

RADM Christopher Cole  
Commander, Navy Region,  
Mid Atlantic  
Building A  
6506 Hampton Boulevard  
Norfolk, VA 23508-1273

Mr. Edgardo Cordero  
Federal Highway Administration  
The Dale Building, Suite 205  
Dale Building  
1504 Santa Rosa Road  
Richmond, VA 23229

Mr. John P. Wolfen  
Supervisor  
Chesapeake Bay Field Office  
U.S. Fish and Wildlife Service  
177 Admiral Cochrane Drive  
Annapolis, MD 21401

Mr. L. Frank Mach  
Region Maritime Programs  
Maritime Admin., S Atlntc Region  
Room 211, Building 4D  
7737 Hampton Boulevard  
Norfolk, VA 23505

Mr. Rick Caldwell  
Marine Transportation Specialist,  
Fleet Operations  
U.S. Military Sealift Cmd Atlantic  
1966 Morris Street  
Norfolk, VA 23511-3496

LCDR Andrew Beaver, NOAA  
Chief, Atlantic Hydrographic Sec.  
National Oceanic and Atmospheric  
Administration  
439 West York Street  
Norfolk, VA 23510-1114

Mr. Thomas N. Mero  
National Oceanic and Atmospheric  
Administration  
1305 East-West Highway  
Silver Spring, MD 20910-3281

Regional Engineer  
Navy Public Works Center  
9742 Maryland Avenue  
Norfolk, VA 23511-3095

Mr. Ray K. Kirby  
Regional Engineer Command  
Code 50  
9742 Maryland Avenue  
Norfolk, VA 23511-3095

Fleet and Industrial Supply Center  
Ocean Terminal Division (Code 302)  
U.S. Naval Base Norfolk  
Suite 600  
1968 Gilbert Street  
Norfolk, VA 23511-3392

Captain Albert L. Dykes, Sr.  
Chief Harbor Pilot  
U.S. Naval Base Norfolk  
3616 Shoreline Drive  
Portsmouth, VA 23703

Commanding Officer  
U.S. Naval Amphibious Base Little Creek  
2600 Tarawa Court, Suite 100  
Attn: Public Works Officer  
Norfolk, VA 23521-3229  
(Attn: Al Siegler)

Honorable Richard J. Holland  
Virginia Senate  
P.O. Box 285  
Windsor, VA 23487-0285

Honorable W. Henry Maxwell  
Virginia Senate  
350 Maple Avenue  
Newport News, VA 23607-4900

Honorable Thomas K. Norment, Jr.  
Virginia Senate  
P.O. Box 1697  
Williamsburg, VA 23187-1697

Mr. David A. Carver  
Ch, Plng Innovation Br. (Code 204)  
Naval Facilities Engineering Cmd  
U.S. Naval Base Norfolk  
1510 Gilbert Street  
Norfolk, VA 23511-2699

BMCS Tommy Glenn  
Port Operations Office  
U.S. Naval Base Norfolk  
Building W313  
Norfolk, VA 23511

Captain W. Douglas Scott  
Assistant Chief Harbor Pilot  
U.S. Naval Base Norfolk  
1653 Morris Street (N3)  
Norfolk, VA 23511

Honorable J. Randy Forbes  
Virginia Senate  
524 Johnstown Road  
Chesapeake, VA 23322-5617

Honorable L. Louise Lucas  
Virginia Senate  
1120 Lakeview Drive  
Portsmouth, VA 23701-3611

Honorable Yvonne B. Miller  
Virginia Senate  
Attn: Ms. Mary Redd Nelson  
2816 Gate House Road  
Norfolk, VA 23504-4021

Honorable Frederick M. Quayle  
Virginia Senate  
3808 Poplar Hill Road, Suite A  
Chesapeake, VA 23321-5524

Honorable Edward L. Schrock  
Virginia Senate  
P.O. Box 62996  
Virginia Beach, VA 23466-2996

Honorable Kenneth W. Stolle  
Virginia Senate  
607 Lynnhaven Parkway, Suite 200  
Virginia Beach, VA 23452-7313

Honorable Stanley C. Walker  
Virginia Senate  
Plume Center West  
100 West Plume Street, Suite 750  
Norfolk, VA 23510-1666

Honorable Martin E. Williams  
Virginia Senate  
P.O. Box 1096  
Newport News, VA 23601-1096

Honorable William K. Barlow  
Virginia House of Delegates  
P.O. Box 190  
Smithfield, VA 23431

Honorable I. Vincent Behm, Jr.  
Virginia House of Delegates  
3325 West Mercury Boulevard  
Hampton, VA 23666

Honorable Harry B. Blevins  
Virginia House of Delegates  
P.O. Box 16207  
Chesapeake, VA 23328

Honorable Mary T. Christian  
Virginia House of Delegates  
P.O. Box 1892  
Hampton, VA 23669

Honorable J. Paul Councill, Jr.  
Virginia House of Delegates  
P.O. Box 119  
Franklin, VA 23851

Honorable Flora Davis Crittenden  
Virginia House of Delegates  
P.O. Box 5046  
Newport News, VA 23605

Honorable Glenn R. Croshaw  
Virginia House of Delegates  
P.O. Box 61888  
Virginia Beach, VA 23466-1888

Honorable Alan A. Diamonstein  
Virginia House of Delegates  
12350 Jefferson Ave., Suite 360  
Newport News, VA 23602

Honorable Thelma Drake  
Virginia House of Delegates  
2306 Bay Oaks Place  
Norfolk, VA 23518

Honorable Phillip A. Hamilton  
Virginia House of Delegates  
P.O. Box 1585  
Newport News, VA 23601

Honorable Johnny S. Joannou  
Virginia House of Delegates  
Attn: Ms. Sheryl Moody Miller  
709 Court Street  
Portsmouth, VA 23704

Honorable Jerrauld C. Jones  
Virginia House of Delegates  
125 Saint Paul's Boulevard, Ste. 300  
Norfolk, VA 23510

Honorable S. Chris Jones  
Virginia House of Delegates  
P.O. Box 5059  
Suffolk, VA 23435-0059

Honorable Robert F. McDonnell  
Virginia House of Delegates  
P.O. Box 62244  
Virginia Beach, VA 23466-2244

Honorable Kenneth R. Melvin  
Virginia House of Delegates  
355 Crawford Parkway, Suite 700  
Portsmouth, VA 23704

Honorable Thomas W. Moss, Jr.  
Speaker of the House  
Virginia House of Delegates  
Bank of the Commonwealth Bldg.  
Suite 360, 403 Boush Street  
Norfolk, VA 23510

Honorable Harry R. Purkey  
Virginia House of Delegates  
2352 Leeward Shore Drive  
Virginia Beach, VA 23451

Honorable William P. Robinson, Jr.  
Virginia House of Delegates  
256 West Freemason Street  
Norfolk, VA 23510

Honorable Lionell Spruill, Sr.  
Virginia House of Delegates  
P.O. Box 5403  
Chesapeake, VA 23324-0403

Honorable Robert Tata  
Virginia House of Delegates  
4536 Gleneagle Drive  
Virginia Beach, VA 23462

Honorable Frank W. Wagner  
Virginia House of Delegates  
P.O. Box 68003  
Virginia Beach, VA 23471

Honorable Leo C. Wardrup, Jr.  
Virginia House of Delegates  
P.O. Box 5266  
Virginia Beach, VA 23471

Honorable Donald L. Williams  
Virginia House of Delegates  
809 West Ocean View Avenue  
Norfolk, VA 23503

Honorable Barry Duval  
Secretary of Commerce and Trade  
Governor's Cabinet  
Ninth St. Office Bldg., Suite 723  
202 N. Ninth Street  
Richmond, VA 23219

Virginia Economic Development  
Partnership  
19th Floor  
Riverfront Plaza  
901 East Byrd Street  
Richmond, VA 23219

Mr. Kevin A. Curling  
Environmental Engineer  
Tidewater Regional Office  
Va Dept of Environmental Quality  
5636 Southern Boulevard  
Virginia Beach, VA 23462

Mr. William Woodfin  
Executive Director  
Virginia Department of Game  
And Inland Fisheries  
4010 West Broad Street  
Richmond, VA 23230

Ms. Mary Ann Rayment  
Department of Motor Vehicles Safe  
Communities  
3551 Buckner Boulevard  
Virginia Beach, VA 23456

Mr. William C. LaBaugh, III  
Large Urban Transit Systems Sec.  
Virginia Department of Rail  
and Public Transportation  
1401 East Broad Street  
Richmond, VA 23219-1939

Secretary of Transportation  
Commonwealth of Virginia  
Room 414  
1401 East Broad Street  
Richmond, VA 23219

Mr. Bill Beuter  
Environmental Program Planner  
Virginia Department of  
Transportation  
1401 East Broad Street  
Richmond VA 23219

Mr. Robert F. Jackson, Jr.  
Environmental Manager  
Tidewater Regional Office  
Va Dept of Environmental Quality  
5636 Southern Boulevard  
Virginia Beach, VA 23462

Mr. Jim McKean  
Senior Project Manager  
Existing Industry Development  
Department of Business Assistance  
P.O. Box 446  
Richmond, VA 23218-0446

Director of Community  
Development  
Division of Industrial  
Development  
1010 State Office Building  
Richmond, VA 23219

Honorable John Paul Woodley  
Secretary of Natural Resources  
Commonwealth of Virginia  
733 Ninth Street Office Building  
Richmond, VA 23219

Director  
Division of Soil and Water  
Conservation  
Suite 206  
203 Governor Street  
Richmond, VA 23219

Mr. Charles D. Nottingham  
Acting Commissioner  
Virginia Department of  
Transportation  
1401 East Broad Street  
Richmond, VA 23219

Mr. Jeffrey Cutright, Chairman  
Hampton Roads Crossing Study  
Coordinating Committee  
Virginia Dept of Transportation  
1401 East Broad Street  
Richmond, VA 23219

Mr. Robert Boothe  
Hampton Roads Crossing Study  
Coordinating Committee  
Virginia Dept of Transportation  
1401 East Broad Street  
Richmond, VA 23219

Mr. Tony Watkinson  
Virginia Marine Resources  
Commission  
2600 Washington Avenue  
Newport News, VA 23607

Mr. Robert R. Merhige, III  
General Counsel and Deputy  
Executive Director  
Virginia Port Authority  
600 World Trade Center  
Norfolk, VA 23510-1696

Mr. John Carlock  
Hampton Roads Planning District  
Commission  
The Regional Building  
723 Woodlake Drive  
Chesapeake, VA 23320

Mr. Hugo R. Valverde  
Hampton Roads Planning District  
Commission  
The Regional Building  
723 Woodlake Drive  
Chesapeake, VA 23320

Mr. John L. Pazour  
City Manager  
City of Chesapeake  
P.O. Box 15225  
Chesapeake, VA 23328

Mr. Donald Z. Goldberg  
Executive Director  
Chesapeake Port Authority  
Suite 304, Tower One  
860 Greenbrier Circle  
Chesapeake, VA 23320

Mr. Robert Grabb  
Chief, Habitat Mangement Div.  
Virginia Marine Resources  
Commission  
2600 Washington Avenue  
Newport News, VA 23607

Mr. J. Robert Bray  
Executive Director  
Virginia Port Authority  
600 World Trade Center  
Norfolk, VA 23510-1696

Mr. Neal T. Wright  
Ch Engineer for Port Development  
Virginia Port Authority  
600 World Trade Center  
Norfolk, VA 23510-1696

Ms. Camelia Ravanbakht  
Hampton Roads Planning District  
Commission  
The Regional Building  
723 Woodlake Drive  
Chesapeake, VA 23320

Mr. Michael Townes  
Executive Director  
Hampton Roads Transit  
3400 Victoria Blvd.  
Hampton, VA 23661

Ms. Jaleh Pett  
Department of Planning  
City of Chesapeake  
P.O. Box 15225  
Chesapeake, VA 23328

Economic Development Department  
City of Chesapeake  
Suite 304, Tower One  
860 Greenbrier Circle  
Chesapeake, VA 23320

Industrial Development Authority  
City of Chesapeake  
Suite 304, Tower One  
860 Greenbrier Circle  
Chesapeake, VA 23320

Mr. George Wallace  
City Manager  
City of Hampton  
22 Lincoln Street  
Hampton, VA 23669

Mr. Steve Mallon  
Acting Director  
Dept of Economic Development  
City of Hampton  
Suite 600, 2 Eaton Street  
Hampton, VA 23669

Industrial Development Authority  
City of Hampton  
Suite 600  
2 Eaton Street  
Hampton, VA 23669

Mr. Ian Bates  
Dockmaster  
Hampton Public Pier  
762 Settlers Landing Road  
Hampton, VA 23669

Ms. Patrick J. Small  
Director, Economic Development  
Isle of Wight County  
Suite 205  
17140 Monument Circle  
Isle of Wight, VA 23397

Mr. Don Robertson  
Economic Development  
Isle of Wight County  
P.O. Box 80  
Isle of Wight, VA 23397

Mr. Robert G. Bates, Port Dvlpmnt  
Administrator and Harbor Master  
Dept of Planning and Development  
City of Newport News  
2400 Washington Avenue  
Newport News, VA 23607

Mr. Roderick S. Woolard  
Director  
Department of Development  
City of Norfolk  
600 City Hall Building  
Norfolk, VA 23510-2735

Mr. Charles E. Rigney  
Manager of Marketing  
Department of Development  
City of Norfolk  
600 City Hall Building  
Norfolk, VA 23510-2735

Mr. W. Keith Cannady  
Department of City Planning and  
Codes Administration  
City of Norfolk  
501 City Hall Building  
Norfolk, VA 23510-2735

Mr. Ronald W. Massie  
City Manager  
City of Portsmouth  
801 Crawford Street  
P.O. Box 820  
Portsmouth, VA 23705

Mr. G. Timothy Oksman, Esq.  
City Attorney  
Portsmouth City Hall  
801 Crawford Street  
Portsmouth, VA 23704

Mr. Matthew James  
Director, Department of Economic  
Development  
City of Portsmouth  
Suite 200, 200 High Street  
Portsmouth, VA 23704



Mr. Tommy Richardson  
Department of Economic  
Development  
City of Portsmouth  
Suite 200, 200 High Street  
Portsmouth, VA 23704

Portsmouth Port and Industrial  
Commission  
City of Portsmouth  
Suite 200  
200 High Street  
Portsmouth, VA 23704

Mr. Paul Fisher  
Plans and Policy Officer  
City of Suffolk  
P.O. Box 1858  
Suffolk, VA 23439

Industrial Development Authority  
City of Suffolk  
201 North Main Street, Suite B  
Suffolk, VA 23434

Mr. Donald L. Maxwell  
Director, Department of Economic  
Development  
City of Virginia Beach  
Suite 300, One Columbus Center  
Virginia Beach, VA 23462

Mr. Anthony J. Russo  
Department of Economic  
Development  
City of Virginia Beach  
Suite 300, One Columbus Center  
Virginia Beach, VA 23462

Mr. Thomas C. Pauls  
Department of Planning  
City of Virginia Beach  
Municipal Center, Building 2  
2405 Courthouse Drive  
Virginia Beach, VA 23456-9040

Industrial Development Authority  
City of Portsmouth  
Suite 200  
200 High Street  
Portsmouth, VA 23704

Mr. Myles E. Standish  
City Manager  
City of Suffolk  
P.O. Box 1858  
Suffolk, VA 23439

Mr. Thomas A. O'Grady, Director  
Department of Economic  
Development  
City of Suffolk  
201 North Main Street, Suite B  
Suffolk, VA 23434

Mr. James K. Spore  
City Manager  
City of Virginia Beach  
Room 234, Building 1  
Municipal Center  
Virginia Beach, VA 23456

Mr. Mark Wawner  
Department of Economic  
Development  
City of Virginia Beach  
Suite 300, One Columbus Center  
Virginia Beach, VA 23462

Ms. Janice Dool  
Department of Planning  
City of Virginia Beach  
Municipal Center, Building 2  
2405 Courthouse Drive  
Virginia Beach, VA 23456-9040

Mr. Phillip J. Roehrs  
Department of Public Works  
City of Virginia Beach  
Municipal Center, Building 2  
2405 Courthouse Drive  
Virginia Beach, VA 23456-9031

College of Business  
Christopher Newport University  
50 Shoe Lane  
Newport News, VA 23606

College of Science and  
Technology  
Christopher Newport University  
50 Shoe Lane  
Newport News, VA 23606

School of Business  
Hampton University  
Hampton, VA 23668-0101

School of Engineering  
Hampton University  
Hampton, VA 23668-0101

Mr. Will Davenport  
School of Business  
Norfolk State University  
2401 Corprew Avenue  
Norfolk, VA 23504

School of Engineering  
Norfolk State University  
2401 Corprew Avenue  
Norfolk, VA 23504

Ms. Sonja Ebron  
Department of Physics and  
Electronics Engineering  
Norfolk State University  
2401 Corprew Avenue  
Norfolk, VA 23504

College of Business and Public  
Administration  
Old Dominion University  
Hampton Boulevard  
Norfolk, VA 23508

Dr. Larry P. Atkinson  
Director, Center for Coastal  
Physical Oceanography  
Old Dominion University  
Hampton Boulevard  
Norfolk, VA 23529

Mr. William R. Daniels  
International Maritime, Ports, and  
Logistics Management Institute  
Old Dominion University  
Hampton Boulevard  
Norfolk, VA 23529-0218

Dr. Bryan Porter  
Assistant Professor  
Department of Psychology  
Old Dominion University  
Norfolk, VA 23529

Dr. John D. Boon  
Department of Physical Sciences  
Virginia Institute of Marine Science  
Greate Road  
Route 1208  
Gloucester Point, VA 23062

School of Business  
College of William and Mary  
P.O. Box 8795  
Williamsburg, VA 23187

AEPCO, Incorporated  
5788 Arrowhead Drive  
Virginia Beach, VA 23462

Ms. Marjorie Adkins  
Chesapeake Region Information  
Service Director  
Alliance for the Chesapeake Bay  
P.O. Box 1981  
Richmond, VA 23218

Al Towing  
P.O. Box 13817  
Chesapeake, VA 23325

American Shore and Beach  
Preservation Association  
412 O'Brien Hall  
University of California  
Berkeley, CA 94720

L.D. Amory Company,  
Incorporated  
101 South King Street  
Hampton, VA 23669

Associated Naval Architects,  
Incorporated  
3400 Shipwright Street  
Portsmouth, VA 23703

Atlantic Container Line  
Suite 200  
4525 South Boulevard  
Virginia Beach, VA 23452

Atlantic Wood Industries,  
Incorporated  
3950 Elm Avenue  
Portsmouth, VA 23704

Allied Towing Corporation  
P.O. Box 717  
Norfolk, VA 23501

Ambrosio Shipping Company  
1400 Cavalier Boulevard  
Chesapeake, VA 23320

Refinery Manager  
Amoco Oil Company  
P.O. Box 578  
Yorktown, VA 23690

Anders Williams Ship Agency,  
Incorporated  
P.O. Box 3430  
Norfolk, VA 23514

Atlantic Coast Equipment  
2129-103 General Booth Blvd.  
Suite 323  
Virginia Beach, VA 23454

Atlantic Dominion Distributors  
5400 Virginia Beach Boulevard  
Virginia Beach, VA 23462

Mr. Joe Harris  
Atlantic Wood/Metrocast  
P.O. Box 340  
Portsmouth, VA 23705

Mr. William S. Hull  
President, Atlantic Yacht Basin  
2615 Basin Road  
Chesapeake, VA 23320

Augusta Towing Company,  
Incorporated  
18101 Polish Town Road  
P.O. Box 278  
Barhamsville, VA 23011

Ms. Wendy Zelencik  
Baker Environmental, Inc.  
Suite 240  
770 Lynnhaven Parkway  
Virginia Beach, VA 23452

Bath Iron Works Corporation  
Suite 1  
5505 Robin Hood Road  
Norfolk, VA 23513

Mr. Patrick A. Yaccarino  
Operations Manager  
Bay Diesel Corporation  
3736 Cook Boulevard  
Chesapeake, VA 23323-1604

Ms. Kathy Wright  
Bay Gulf Trading Company, Ltd.  
150 South Main Street  
Norfolk, VA 23523

Bayshore Concrete Products,  
Incorporated  
1010 Bells Mill Road  
Chesapeake, VA 23320

Bay Towing Corporation  
P.O. Box 12477  
Norfolk, VA 23541

BDP International, Incorporated  
6330 Newtown Road  
Norfolk, VA 23502

Berkley Machine Works and  
Foundry Company, Incorporated  
P.O. Box 4566  
Norfolk, VA 23523

Blue Circle Cement, Incorporated  
Foot of Pratt Street  
Chesapeake, VA 23324

Blue Star Line  
201 East City Hall Avenue  
Norfolk, VA 23510

Brown and Williamson  
International  
1245 Peoples Way  
Virginia Beach, VA 23451

W. J. Browning Company,  
Incorporated  
127 Bank Street  
Norfolk, VA 23510

L.P. Buchanan Marine  
Suite 2D  
One Liberty Square  
New Britain, CT 06051

Campostella Machine Shop  
307 Campostella Road  
Norfolk, VA 23523

C and M Oil Distributors,  
Incorporated  
121 Republic Road  
Chesapeake, VA 23324

Mr. Steve Parks  
Capes Shipping Agencies,  
Incorporated  
1128 West Olney Road  
Norfolk, VA 23507

Cargill, Incorporated  
P.O. Box 7506  
Chesapeake, VA 23324

Carter Machinery Company,  
Incorporated  
1601 South Main Street  
Norfolk, VA 23523

Casey's Seafoods, Incorporated  
807 Jefferson Avenue  
Newport News, VA 23607

Mr. Thomas Fox  
CASRM  
222 East Main Street  
Norfolk, VA 23510

Cavalier Shipping Company,  
Incorporated  
P.O. Box 1138  
Norfolk, VA 23501

Ceres Marine Terminals,  
Incorporated  
Suite 102  
801 Broad Street  
Portsmouth, VA 23707

Citgo Petroleum Corporation  
110 Freeman Avenue  
Chesapeake, VA 23324

Chesapeake and Interstate Pilot  
Association, Incorporated  
P.O. Box 3276  
Norfolk, VA 23514

Executive Director  
Chesapeake Bay Bridge and Tunnel  
Commission  
P.O. Box 111  
Cape Charles, VA 23310-0111

Mr. Paul A. Burnette, Jr.  
Director of Maintenance  
Chesapeake Bay Bridge and Tunnel  
District  
P.O. Box 111  
Cape Charles, VA 23310-0111

Mr. Walter C. Grantz  
Chief Engineer  
Chesapeake Bay Bridge and Tunnel  
District  
P.O. Box 111  
Cape Charles, VA 23310-0111

The Chesapeake Bay Foundation  
1001 East Main Street  
Richmond, VA 23219

Chesapeake Bay Packing, LLC  
800 Terminal Avenue  
Newport News, VA 23607

Circle International, Incorporated  
Suite 107  
5733 Bayside Road  
Virginia Beach, VA 23455

Coastal Refining and Marketing,  
Incorporated  
P.O. Box 025500  
Miami, FL 33102

Commonwealth Propane,  
Incorporated  
2901 South Military Highway  
Chesapeake, VA 23320

John S. Conner, Incorporated  
Suite 8  
Monticello Arcade  
Norfolk, VA 23510

Mr. Joel L. Waterfield  
Assistant Director of Maintenance  
Chesapeake Bay Bridge and Tunnel  
District  
P.O. Box 111  
Cape Charles, VA 23310-0111

Ms. Jenn Aiosa  
The Chesapeake Bay Foundation  
111 Annapolis Street  
Annapolis, MD 21401

Chesapeake West Terminal,  
Incorporated  
2649 South Military Highway  
Chesapeake, VA 23324

Coal Export Services, Incorporated  
130 Granby Street  
Norfolk, VA 23510

Mr. J. Douglas Forrest  
Vice President  
Colonna's Shipyard, Incorporated  
400 East Indian River Road  
Norfolk, VA 23523

Commonwealth Storage Corporation  
P.O. Box 43  
Suffolk, VA 23434

CONSOL, Incorporated  
Suite 1214  
999 Waterside Drive  
Norfolk, VA 23510

Continental Coal and Shipping,  
Incorporated  
11868 Fishing Point Drive  
Newport News, VA 23606

Contship Container Lines,  
Incorporated  
Suite 130  
208 Golden Oak Court  
Virginia Beach, VA 23452

Cooper/T. Smith Stevedoring,  
Incorporated  
P.O. Box 6188  
Norfolk, VA 23508

Cottrell Engineering Corporation  
328 North Battlefield Boulevard  
Chesapeake, VA 23320

Captain George E. Watkins  
Craney Island Study Commission  
4301 Hatton Point Road  
Portsmouth, VA 23703

Crofton Diving Corporation  
16 Harper Avenue  
Portsmouth, VA 23707

CSX Transportation  
3601 Terminal Avenue  
Newport News, VA 23607

CV International, Incorporated  
P.O. Box 3295  
Norfolk, VA 23514

Mr. Dennis O'Brien  
Staff Writer  
The Daily Press  
7505 Warwick Boulevard  
Newport News, VA 23607

Danzas Corporation  
Suite 2  
4794 Finlay Street  
Richmond, VA 23231

Davis Boat Works, Incorporated  
99 Jefferson Avenue  
Newport News, VA 23607

Mr. Russell Davis  
Davis Grain Corporation  
5500 Bainbridge Boulevard  
Chesapeake, VA 23320

Mr. Carlton L. Day  
Assistant Project Manager  
S.W. Day Construction Corporation  
820 Greenbrier Circle, Unit 30  
Chesapeake, VA 23320

Diesel Tech, Incorporated  
4016 Seaboard Court  
Portsmouth, VA 23701

Dominion International,  
Incorporated  
P.O. Box 3217  
Norfolk, VA 23514

Mr. Stephen A. Wylie  
Mgr, Production & Quality Control  
Dominion Terminal Associates  
Harbor Road  
Pier 11  
Newport News, VA 23607

Dynamac Corporation  
2807 Shearwater Cove  
Virginia Beach, VA 23454-1859

Earl Industries  
826 Mount Vernon Avenue  
Portsmouth, VA 23707

Eastern Shore Railroad Company  
202 Mason Avenue  
Cape Charles, VA 23310

Eimskip U.S.A.  
P.O. Box 3698  
Norfolk, VA 23514

Ms. Marjorie Mayfield  
Executive Director  
The Elizabeth River Project  
801 Boush Street  
Norfolk, VA 23510

Mr. Charles E. Brinley  
President and COO  
Dominion Terminal Associates  
Harbor Road  
Pier 11  
Newport News, VA 23607

Mr. John R. Brandon  
CEO  
Dreadnought Marine, Incorporated  
P.O. Box 2613  
3200 East Princess Anne Road  
Norfolk, VA 23501-2613

E and B International, Incorporated  
5353 E Princess Anne Road  
Suite A  
Norfolk, VA 23502

Eastern Export Company,  
Incorporated  
966 Norfolk Square  
Norfolk, VA 23502

Eastport Customs Brokers,  
Incorporated  
#4302A  
732 Thimble Shoals Boulevard  
Newport News, VA 23606

Elizabeth River Land Company  
P.O. Box 60  
Monroe, CT 06468

Mr. Phil Stedfast  
Manager, Customer Relations  
Elizabeth River Terminals,  
Incorporated  
4100 Buell Street  
Chesapeake, VA 23324



Evergreen America Corporation  
6300 World Trade Center East  
Norfolk, VA 23510

Express Marine, Incorporated  
P.O. Box 329  
Pennsauken, NJ 08110

Farrell Lines, Incorporated  
7737 Hampton Boulevard  
Norfolk, VA 23505

Mr. John F. Matthews  
Operations Manager  
Federal Marine Terminals (Richmond), Inc.  
5000 Deepwater Terminal Road  
Richmond, VA 23234

Fenley Trading, Incorporated  
Foot of Orapax Street  
Norfolk, VA 23507

First Colony Coffee and Tea  
Company, Incorporated  
P.O. Box 11005  
Norfolk, VA 23517

Fred P. Gaskell Company,  
Incorporated  
P.O. Box 3157  
Norfolk, VA 23514

Fritz Companies, Incorporated  
500 Woodlake Circle  
Chesapeake, VA 23320

Genco Service Center of Virginia  
806 Meads Court  
Chesapeake, VA 23323

Graham and Rollins, Incorporated  
19 Rudd Lane  
Hampton, VA 23669

Mr. Dan Hussin  
Great Lakes Dredge and Dock  
Company  
2212 York Road  
Oak Brook, IL 60523

E.T. Gresham Company,  
Incorporated  
P.O. Box 1077  
Norfolk, VA 23501

Mr. John A. Hornbeck, Jr., CCE  
President and CEO  
Hampton Roads Chamber of  
Commerce  
420 Bank Street  
Norfolk, VA 23510

Mr. Hans Gant  
President, Hampton Roads  
Economic Development Alliance  
Suite 1300  
500 Main Street  
Norfolk, VA 23510

Mr. J.J. Keever  
Executive Vice-President  
Hampton Roads Maritime  
Association  
236 East Plume Street  
Norfolk, VA 23510

Mr. John Simon  
Hampton Roads Maritime  
Association  
236 East Plume Street  
Norfolk, VA 23510

Mr. Steve Phillips  
Hampton Roads Recreational Safe  
Boating Coalition  
U.S. Coast Guard  
431 Crawford Street  
Portsmouth, VA 23704

Hampton Roads Seafood, Limited  
29 East Sunset Road  
Hampton, VA 23669

Mr. Doug Perry  
Commodore  
Hampton Yacht Club  
4707 Victoria Boulevard  
Hampton, VA 23669-4193

Harbor Barge, Incorporated  
3537 Campion Avenue  
Virginia Beach, VA 23462

Hasler and Company  
P.O. Box 359  
Norfolk, VA 23501

Mr. Kelley Platz  
Administrator  
Hampton Roads Maritime  
Association  
236 East Plume Street  
Norfolk, VA 23510

Mr. James L. Eason  
President and CEO  
Hampton Roads Partnership  
Suite 430  
World Trade Center  
Norfolk, VA 23510

Ms. Joy J. Sullivan  
Hampton Roads Recreational Safe  
Boating Coalition  
Drive Smart Consultant  
261 Overholt Drive  
Virginia Beach, VA 23462

Mr. William E. Abbott  
President  
Hampton Roads Watermen's  
Association  
1212 Winston Street  
Norfolk, VA 23518

Hapag-Lloyd (America),  
Incorporated  
Building 4-D, #200  
7737 Hampton Boulevard  
Norfolk, VA 23505

The Hardaway Company  
1500 Shipyard Road  
Chesapeake, VA 23320

Higgerson-Buchanan, Incorporated  
5300 Bainbridge Boulevard  
Chesapeake, VA 23320

The Hipage Company,  
Incorporated  
P.O. Box 3158  
Norfolk, VA 23514

Holiday Inn-Portsmouth  
8 Crawford Parkway  
Portsmouth, VA 23704

Holmes Brothers Enterprises,  
Incorporated  
5474 Nansemond Parkway  
Suffolk, VA 23435

Mr. David Host  
Executive Vice President  
T. Parker Host, Incorporated  
Suite 820  
World Trade Center  
Norfolk, VA 23510

Mr. Thomas P. Host III  
Vice President  
T. Parker Host, Incorporated  
Suite 820  
World Trade Center  
Norfolk, VA 23510

Mr. John S. Pucher  
Boarding Agent  
T. Parker Host, Incorporated  
Suite 820  
World Trade Center  
Norfolk, VA 23510

F.D. Hunt Company  
801 Newcombe Avenue  
Hampton, VA 23669

Iceland Prime Contractor  
P.O. Box 3128  
Norfolk, VA 23514

ILVA America, Incorporated  
1128 West Olney Road  
Norfolk, VA 23507

IMTT – Chesapeake  
2801 South Military Highway  
Chesapeake, VA 23323

Inchcape Shipping Services  
201 East City Hall Avenue  
Norfolk, VA 23510

Independent Docking Pilots,  
Incorporated  
P.O. Box 61012  
Virginia Beach, VA 23466

Industrial Marine Service,  
Incorporated  
P.O. Box 1779  
Norfolk, VA 23501

International Longshoremen's  
Association  
Suite 201  
1355 International Terminal  
Boulevard  
Norfolk, VA 23505

International Organization-  
Masters, Mates and Pilots  
P.O. Box 6036  
Norfolk, VA 23508

International Shipping Services  
P.O. Box 505  
Chesterfield, VA 23832

Ireland Marine, Incorporated  
134 Tilden Avenue  
Chesapeake, VA 23320

I.T.O. Corporation of Virginia  
Room 214  
Building 4D  
7737 Hampton Boulevard  
Norfolk, VA 23505

Jack's Launch Service,  
Incorporated  
2212 Great Neck Road  
Virginia Beach, VA 23451-1506

Jacobson Metal Company  
4300 Buell Street  
Chesapeake, VA 23324

Jalbert and Associates,  
Incorporated  
150 S Main Street  
Norfolk, VA 23523-1130

Jones Marina  
519 Bridge Street  
Hampton, VA 23669

D.D. Jones Transfer and  
Warehouse Company,  
Incorporated  
2626 Indian River Road  
Chesapeake, VA 23325

Mr. Pat Criddle  
President  
Frank L. Jordan Corporation  
P.O. Box 5133  
Suffolk, VA 23435-5133

Captain Ray Hurst  
Kanak, Limited  
1501 South Main Street  
Norfolk, VA 23523

Ms. Kay A. Kemper  
President  
Kemper Consulting  
Monticello Arcade, Suite 345  
208 East Plume Street  
Norfolk, VA 23510

Kerr Steamship Company,  
Incorporated  
Suite 550  
1401 Greenbrier Parkway  
Chesapeake, VA 23320

Koch Fuels, Incorporated  
801 Terminal Avenue  
Newport News, VA 23607

Kuehne and Nagel, Incorporated  
801 Boush Street, Ste 300  
Norfolk, VA 23510-1533

Mr. Ron Taylor  
Import/Export Department  
Lambert's Point Docks, Incorporated  
P.O. Box 89  
Norfolk, VA 23501

Mr. Robert M. Kennedy  
Langley and McDonald  
Suite 200  
5544 Greenwich Road  
Virginia Beach, VA 23462

Lehigh Portland Cement Company  
8501 Hampton Boulevard  
Norfolk, VA 23505

Lockwood Brothers, Incorporated/  
Lockwood Marine, Incorporated  
220 Salters Creek Road  
Hampton, VA 23669

LQM Petroleum Services  
80 Broadway  
Cresskill, NJ 07626

Lykes Lines, Limited  
Suite 1100  
555 Main Street  
Norfolk, VA 23510

Ms. Corine E. Barbour  
Manager, Administration  
Import/Export Department  
Lambert's Point Docks, Incorporated  
P.O. Box 89  
Norfolk, VA 23501

Mr. Thomas Langley  
Langley and McDonald  
Suite 200  
5544 Greenwich Road  
Virginia Beach, VA 23462

E.T. Lawson and Sons,  
Incorporated  
4 Ivy Home Road  
Hampton, VA 23669

L.M. Lewis Company  
P.O. Box 2253  
Norfolk, VA 23501

Mr. Pete Nixon  
Lower Chesapeake Bay  
Watermen's Association  
664 Ingleside Road  
Norfolk, VA 23502

Lusk Shipping Company,  
Incorporated  
5733 Bayside Road  
Virginia Beach, VA 23455

Mr. Thomas Ackiss  
Lyon Shipyard, Incorporated  
Foot of Brown Avenue  
P.O. Box 2180  
Norfolk, VA 23501

Maersk, Incorporated  
6000 World Trade Center  
Norfolk, VA 23510

W.F. Magann Corporation  
3220 Mariner Avenue  
Portsmouth, VA 23703

Malpass Construction Company,  
Incorporated  
2650 East Indian River Road  
Chesapeake, VA 23325

M and S Shipping, Limited  
Suite 229  
5 Koger Executive Center  
Norfolk, VA 23502

Marine Forwarding Company,  
Incorporated  
P.O. Box 2256  
Norfolk, VA 23501

Ms. Shirley Roebuck  
Terminal Manager  
Marine Freight Company, Inc.  
400 Lee Avenue  
Portsmouth, VA 23707

Marine Fuel Logistics, Inc.  
5353 E Princess Anne Road  
Suite E  
Norfolk, VA 23502

Marine Oil Service, Incorporated  
1421 South Main Street  
Norfolk, VA 23523

Marine Spill Response  
Corporation  
2465 Ferry Road  
Virginia Beach, VA 23455

Mark VII  
Suite 123-103  
5660 Indian River Road  
Virginia Beach, VA 23464

MARPOL, Incorporated  
150 South Main Street  
Norfolk, VA 23523

Massey Coal Export Company  
P.O. Box 26765  
Richmond, VA 23261

Mr. Arthur Knudson  
General Manager, McAllister  
Towing of Virginia, Incorporated  
Suite 1004  
2600 Washington Avenue  
Newport News, VA 23607

McLean Contracting Company  
100 Republic Road  
Chesapeake, VA 23324

Mr. Thomas Lilley  
MEBA D-1  
1058 West 40th Street  
Norfolk, VA 23508

Mediterranean Shipping Company  
(USA), Incorporated  
Suite 902  
555 Main Street  
Norfolk, VA 23510

Menchville Marine Supply  
Company  
494B Menchville Road  
Newport News, VA 23602

Metro Machine Corporation  
P.O. Box 1860  
Norfolk, VA 23501

MHI-Marine Hydraulics  
International, Incorporated  
543 East Indian River Road  
Norfolk, VA 23523

Mr. John Gamble  
Operation Manager  
Mid-Atlantic Terminals, LLC  
P.O. Box 5484  
Chesapeake, VA 23324

J.H. Miles and Company,  
Incorporated  
P.O. Box 178  
Norfolk, VA 23501

Miller Oil Company, Incorporated  
P.O. Box 1858  
Norfolk, VA 23501

Mitsui OSK Lines America,  
Incorporated  
720 World Trade Center  
Norfolk, VA 23510

Mobil Oil Corporation  
P.O. Box 5098  
Chesapeake, VA 23324

Monad Systems, Incorporated  
220 Salters Creek Road  
Hampton, VA 23661

Moon Engineering Company,  
Incorporated  
2 Harper Avenue  
Portsmouth, VA 23707

Mr. Paul Horsboll  
Vice President and General Manager  
Moran Towing of Virginia,  
Incorporated  
1901 Brown Avenue  
Norfolk, VA 23504

MSAS Customs Logistics,  
Incorporated  
P.O. Box 13084  
Norfolk, VA 23506

F.W. Myers and Company,  
Incorporated  
P.O. Box 3830  
Norfolk, VA 23514

Nelson International, Incorporated  
6310 East Virginia Beach Blvd  
Norfolk, VA 23502

Newport News Marine Terminal  
P.O. Box 1387  
Norfolk, VA 23501

Newport News Shipbuilding and  
Drydock Company  
4101 Washington Avenue  
Newport News, VA 23607

Nippon Express U.S.A., Incorporated  
281 Picketts Lane  
Newport News, VA 23603

NOL (USA), Incorporated  
Suite 203  
1226 Progressive Drive  
Chesapeake, VA 23320

Norfolk and Portsmouth Belt Line  
Railroad  
P.O. Box 7547  
Portsmouth, VA 23707

Norfolk Barge Company  
400 East Indian River Road  
Norfolk, VA 23523

Mr. David Jordan  
President  
Norfolk Boat, Incorporated  
1034 Naval Avenue  
Portsmouth, VA 23704

Mr. Russell J. Thorne  
Executive Vice President  
Norfolk Dredging Company  
110 North Centerville Turnpike  
P.O. Box 1706  
Chesapeake, VA 23327-1706

Mr. G. Dudley Ware  
Vice President  
Norfolk Dredging Company  
110 North Centerville Turnpike  
P.O. Box 1706  
Chesapeake, VA 23327-1706

Norfolk International Terminals  
P.O. Box 1387  
Norfolk, VA 23501

Norfolk Oil Transit, Incorporated  
P.O. Box 1756  
Norfolk, VA 23501

Dr. Robert E. Martinez  
Assistant Vice President,  
Marketing  
Norfolk Southern Corporation  
Three Commercial Place  
Norfolk, VA 23510-9206



Mr. Paul E. Gibson, Jr.  
Superintendent  
Norfolk Terminal  
Norfolk Southern Corporation  
2200 Redgate Avenue  
Norfolk, VA 23507

Mr. J. Grady  
General Manager  
Norfolk Yacht and Country Club  
7001 Hampton Boulevard  
Norfolk, VA 23505

Norton Lilly International,  
Incorporated  
1401 Greenbrier Parkway  
Chesapeake, VA 23320

NSCSA (America), Incorporated  
Room 204  
7737 Hampton Boulevard  
Norfolk, VA 23505

Ocean to Ocean Seafood Sales,  
Incorporated  
Suite 200  
448 Viking Drive  
Virginia Beach, VA 23452

Old Point Packing Company,  
Incorporated  
801 Jefferson Avenue  
Newport News, VA 23607

Overseas Freight Corporation  
201 East City Hall Avenue  
Norfolk, VA 23510

Mr. Fred Schultz  
General Manager  
Norfolk Warehouse Distribution  
Centers, Incorporated  
6969 Tidewater Drive  
Norfolk, VA 23509

Mr. E.C. Reilly, Jr.  
Vice President of Facilities  
Norshipco-Norfolk Shipbuilding and  
Drydock Corporation  
P.O. Box 2100  
Norfolk, VA 23501-2100

Mr. Pete Graham  
Site Leader  
Nova Chemicals (USA), Inc.  
5100 Bainbridge Boulevard  
Chesapeake, VA 23320

NYK Line (North America),  
Incorporated  
Suite 103  
1355 Terminal Boulevard  
Norfolk, VA 23505

Ocean Vending  
604 Fort Raleigh Drive  
Virginia Beach, VA 23451

OOCL (USA), Incorporated  
Suite 100  
18 Koger Executive Center  
Norfolk, VA 23502

Mr. Tom Dushatinski  
P and O/Nedlloyd Lines (USA)  
Corporation  
Suite 285  
1401 Greenbrier Parkway  
Chesapeake, VA 23320

PAPCO, Incorporated  
407 Jefferson Avenue  
Newport News, VA 23607

PAPCO, Incorporated  
4920 Southern Boulevard  
Virginia Beach, VA 23462

Peabody, LLC  
675 Jefferson Avenue  
Newport News, VA 23607

Peck Equipment Company  
P.O. Box 419  
Norfolk, VA 23501-0419

Mr. J. Elmore Eubank, Jr.  
Peninsula Ports Authority of  
Virginia  
Suite 230  
12350 Jefferson Avenue  
Newport News, VA 23602

PetroChem Recovery Services,  
Incorporated  
P.O. Box 1458  
Norfolk, VA 23501

Philip Morris International  
800 Westchester Avenue  
Rye Brook, NY 10573

Pier IX Terminal Company  
P.O. Box 38  
Newport News, VA 23607

Pilot Marine Corporation  
904 Southampton Avenue  
Norfolk, VA 23510

Piney Point Transportation Company  
1316 Smith Douglas Road  
Chesapeake, VA 23320

Plaza Fueling Agents,  
Incorporated  
50 Park Avenue  
Rutherford, NJ 07070

Portsmouth Marine Terminal  
P.O. Box 1387  
Norfolk, VA 23501

C.H. Powell and Company  
Suite 310  
208 East Plume Street  
Norfolk, VA 23510

Radisson Hotel Hampton  
700 Settlers Landing Road  
Hampton, VA 23669

Ramsay Agencies, Incorporated  
P.O. Box 3430  
Norfolk, VA 23514

Regional Enterprises, Incorporated  
410 Water Street  
Hopewell, VA 23860

Rice, Unruh, Reynolds  
4876-118 Princess Anne Rd  
Suite 345  
Virginia Beach, VA 23462

Mr. Martin J. Moynihan  
Executive Director  
Port of Richmond  
5000 Deepwater Terminal Road  
Richmond, VA 23234

Roanoke Cement Company  
Foot of Ohio Street  
Chesapeake, VA 23324

Rogers and Brown Custom Brokers,  
Incorporated  
Suite 314A  
6160 Kempsville Circle  
Norfolk, VA 23502

Rogers Terminal and Shipping  
P.O. Box 7536  
Chesapeake, VA 23324

Romar Transportation Systems,  
Incorporated  
3500 South Kedzae  
Chicago, IL 60632

Sadler Materials Corporation  
4606 Bainbridge Boulevard  
Chesapeake, VA 23320

Salisbury Towing Corporation  
938 Quarry Road  
Havre De Grace, MD 21078

S and S Marine Supply,  
Incorporated  
14 Ivy Home Road  
Hampton, VA 23669

Schenker International, Incorporated  
Suite 300  
1300 Diamond Springs Road  
Virginia Beach, VA 23455

Sea-Land Service, Incorporated  
P.O. Box 7099  
Portsmouth, VA 23707

Seamodal Transport Corporation  
P.O. Box 3398  
Norfolk, VA 23514

Searich Seafoods, Incorporated  
201 Jefferson Avenue  
Newport News, VA 23607

Samuel Shapiro and Company,  
Incorporated  
810 World Trade Center  
101 West Main Street  
Norfolk, VA 23510

Sheraton Norfolk Hotel  
777 Waterside Drive  
Norfolk, VA 23510

Shipbuilding Counsel of America  
Suite 204  
901 North Washington Street  
Alexandria, VA 22314

Sierra Club  
Virginia Chapter  
P.O. Box 14648  
Richmond, VA 23221-0648

Southern Materials  
100 Dominion Boulevard  
Chesapeake, VA 23320

Southern Overseas Corporation  
P.O. Box 3970  
Norfolk, VA 23514

Southern States Cooperative,  
Incorporated  
2651 Military Highway  
Chesapeake, VA 23320

Mr. Dan M. Thornton, Jr.  
Chairman of the Board  
Southgate Corporation  
P.O. Box 41055  
Norfolk, VA 23541-1055

Mr. David L. Miller  
Southgate Corporation  
P.O. Box 41055  
Norfolk, VA 23541-1055

STIHL, Incorporated  
536 Viking Drive  
Virginia Beach, VA 23452

Mr. Meade Stone, Jr.  
W.M. Stone and Company,  
Incorporated  
P.O. Box 3160  
Norfolk, VA 23514

Stone Marine Technical  
P.O. Box 6282  
Chesapeake, VA 23323

Strachan Shipping Company  
Building 13  
6330 N Center Drive, Suite 201  
Norfolk, VA 23502

Mr. Jim Rich  
Port Captain  
Tarmac America, Incorporated  
1151 Azalea Garden Road  
Norfolk, VA 23502

Texaco Fuel and Marine Marketing  
Department  
2000 Westchester Avenue  
White Plains, NY 10650

Mr. Sam D. Lovelace, III  
Manager, Marine Operations  
Tidewater Construction  
Corporation  
P.O. Box 57  
Norfolk, VA 23501

Mr. Hank Strickland  
Tidewater Construction Corporation  
P.O. Box 57  
Norfolk, VA 23501

Tidewater Yacht Marina  
10 Crawford Parkway  
Portsmouth, VA 23704

Todd Marine Enterprises  
508 East Indian River Road  
Norfolk, VA 23523

Tri-Port Terminals, Incorporated  
P.O. Box 9068  
Virginia Beach, VA 23450

Ms. Catharine Tucker  
Chairperson  
Trout Unlimited Virginia Council  
302 Danray Drive  
Richmond, VA 23227

Mr. Scott Kohler  
United States Gypsum Company  
1001 Buchanan Street  
Norfolk, VA 23523

Mr. Joseph Hanberry  
United Watermen's Association  
64 Forest Road  
Poquoson, VA 23662

United Winner Metals,  
Incorporated  
2649 Military Highway  
Chesapeake, VA 23320

Universal Leaf Tobacco Company,  
Incorporated  
P.O. Box 25099  
Richmond, VA 23260

Universal Maritime Service  
Company  
Room 110  
Building 4D  
7737 Hampton Boulevard  
Norfolk, VA 23505

Vane Line Bunkering  
Pier 11, Canton  
4209 Newgate Avenue  
Baltimore, MD 21224

Mr. John Vickerman  
Vickerman•Zachary•Miller  
Suite 202  
2100 Reston Parkway  
Reston, VA 22091-1218

Mr. Roger Fitchett  
President  
Virginia B.A.S.S. Chapter Federation  
113 Lavergne Lane  
Virginia Beach, VA 23454

Mr. Gary Newsome  
Virginia Business Observer  
300 East Main Street  
Norfolk, Va 23510

Virginia Conservation Network  
Suite 410  
1001 East Broad Street  
Richmond, VA 23219

Association of Virginia Docking  
Pilots  
Suite 108  
Pembroke Five  
Virginia Beach, VA 23462

Virginia Marine Services  
828 Linbay Drive  
Virginia Beach, VA 23451

Mr. J.A. Denton  
President, Virginia Peninsula  
Economic Development Council  
Suite 230  
12350 Jefferson Avenue  
Newport News, VA 23602

Mr. George L. Beals  
President  
Virginia Association of Soil and  
Water Conservation Districts  
10000 Catharpin Road  
Spotsylvania, VA 22553

Mr. Mitchell Perkins  
Virginia Bass Federation  
12003 Bourne Road  
Glen Allen, VA 23060

Mr. Hugh Keogh  
Virginia Chamber of Commerce  
9 South Fifth Street  
Richmond, VA 23219

Virginia Crane, Incorporated  
P.O. Box 8635  
Virginia Beach, VA 23450-8635

Virginia International Terminals,  
Incorporated  
P.O. Box 1387  
Norfolk, VA 23501

Mr. Clyde R. Hoey, II  
Virginia Peninsula Chamber of  
Commerce  
P.O. Box 7269  
Hampton, VA 23666

Captain J. William Cofer  
President  
Virginia Pilot Association  
3329 Shore Drive  
Virginia Beach, VA 23451

Captain Bobby Callis  
Board of Directors  
Virginia Pilot Association  
2800 Ocean Mist Court  
Virginia Beach, VA 23454

Captain L.D. Amory, III  
Virginia Pilot Association  
3329 Shore Drive  
Virginia Beach, VA 23451

Mr. William H. Duis, Jr.  
Director  
Distribution Reliability  
Virginia Power  
2700 Cromwell Drive  
Norfolk, VA 23509-2406

Virginia Wildlife Federation  
LL5  
1001 East Broad Street  
Richmond, VA 23219

Wanchise Fish Company  
48 Water Street  
Hampton, VA 23669

The Waterside Festival Marketplace  
333 Waterside Drive  
Norfolk, VA 23510

Waterside Marriott Norfolk  
235 East Main Street  
Norfolk, VA 23510

Weaver Fertilizer Company,  
Incorporated  
P.O. Box 3730  
Norfolk, VA 23514

Western Branch Diesel,  
Incorporated  
P.O. Box 7788  
Portsmouth, VA 23707

Ms. Mary Tritch  
Wilhelmsen Lines (USA),  
Incorporated  
7737 Hampton Boulevard  
Norfolk, VA 23505-1204

The Williams and Beasley  
Company  
1035 West 25th Street  
Norfolk, VA 23517

Williams Corporation of Virginia  
120 Dominion Boulevard  
Chesapeake, VA 23320

Williams, Dimond, and Company  
201 East City Hall Avenue  
Norfolk, VA 23510

Mr. Pete Freeman  
Vice President  
Working Watermen's Association  
380 Henry Street  
Hampton, VA 23669

Mr. T.J. Wright  
President  
Wright Dredging Company  
9584 Bear Trap Circle  
Windsor, VA 23487



# **APPENDIX G**

## **WORKSHOP NOTES**

**WORKSHOP #1**

**OCTOBER 23, 1997**



DEPARTMENT OF THE ARMY  
NORFOLK DISTRICT, CORPS OF ENGINEERS  
FORT NORFOLK, 803 FRONT STREET  
NORFOLK, VIRGINIA 23510-1096

REPLY TO  
ATTENTION OF

December 3, 1997

Planning Resources Branch

SEE LIST OF ADDRESSEES

Dear Sir or Madam:

Enclosed for your information are the final notes of the proceedings from the initial scoping meeting for the Navigation Management Plan for the Port of Hampton Roads conducted on October 23, 1997 at the Marriott Hotel in Norfolk. Draft notes were provided to attendees for their review and comment prior to finalizing the record of the meeting.

Most of you received previous correspondence announcing the initiation of the Navigation Management Plan and requesting identification and prioritization of problems, needs, concerns, and opportunities associated with the use and development of the Port. Also, many of you were asked to identify historical data sources which may be beneficial to reference in the report. Our current focus is to complete this portion of the plan, and we will be contacting some of you by telephone to obtain your input.

Following the identification and prioritization of problems and opportunities, we will evaluate the impacts of future actions that are planned for the Port. And further along in the development of the Plan, with your assistance, we will develop potential solutions to identified problems and formulate a long-range plan to facilitate the most efficient and effective future use and development of the Port. During the coming months, we plan to develop our Circle A stakeholder group to facilitate participation in development of the Plan and workshop meetings will be scheduled. Circle A stakeholders will act as the principal advisors and reviewers during the development and subsequent updates of the Plan.

Your comments on the scoping meeting proceedings and/or any other aspect of the Navigation Management Plan are encouraged. Please call Thomas J. Loehen, Study Manager, at (757) 441-7539 if you have questions. Your cooperation is appreciated.

Sincerely,

Robert H. Reardon, Jr.  
Colonel, U.S. Army  
District Engineer

Enclosure

NAVIGATION MANAGEMENT PLAN FOR THE PORT OF  
HAMPTON ROADS, VIRGINIA  
SCOPING MEETING  
OCTOBER 23, 1997  
SUMMARY NOTES

A scoping meeting was held at the Marriott Hotel in Norfolk on October 23, 1997. A list of attendees is attached. The meeting was opened with introductory remarks by Major Don Wilkerson, Deputy District Engineer, who then turned the proceedings over to the Study Manager, Tom Lochen, who gave an overview of the Plan approach. Attendees were then asked to express any concerns, problems, needs, and opportunities associated with the use and development of the Port. The following is a summary of the comments expressed at the meeting by subject matter.

Physical Scope of the Plan

1. John Mathews, Federal Marine (Richmond) Terminals, Inc., asked if the Plan would include the James River up to Richmond. Tom Lochen indicated that the Plan would include only the Port of Hampton Roads up to the vicinity of the James River Bridge.
2. Doug Scott, Naval Station Harbor Pilot, asked if the Navy's Yorktown facilities are included in the Plan. Tom Lochen indicated that the York River is outside the scope of this effort.

Deep Draft Anchorages

3. Rick Amory, Virginia Pilot Association, indicated a current need for a 50-foot-deep anchorage to compliment the existing 50-foot outbound channel and a future need for 55-foot-deep anchorages to compliment the 55-foot-deep channel when constructed.
4. Robert Pretlow, Corps of Engineers, indicated that the 50-foot-deep anchorage improvement is planned for construction in the near future depending on the availability of necessary Federal and local funding.
5. Paul Horsball, Moran Towing Company, asked the location of the new 50-foot anchorage. Mr. Pretlow indicated the location is just inside the Hampton Roads Bridge Tunnel in the vicinity of the Quarantine Anchorage.
6. David Host, T. Parker Host, Inc., suggested that additional access to U.S. Navy anchorages by commercial vessels would be beneficial.

Encl

7. Rick Amory stated that the Pilots have an excellent relationship with the Navy and Coast Guard regarding the use of Naval anchorages and indicated it would be beneficial if the Navy would be willing to give up one of their anchorages for full-time commercial use.
8. Doug Scott suggested that an invitation be extended to active duty Navy personnel on this effort to help resolve any potential conflicts between Navy and commercial users.

#### Deep Draft Channels

9. Rick Amory indicated the need for 55-foot deep channels in Hampton Roads and suggested that Pilots do not prefer split-level channels.
10. Jeff Kever, Hampton Roads Maritime Association, emphasized two priorities--the first is the need for a 50-foot-deep inbound channel to accommodate the new mega ships, and the second is the future need for a 55-foot-deep channel both inbound and outbound.
11. Paul Horsball referred to the recent Mega Ship Conference in July 1997 and the future need for deeper channels for coal colliers (55 feet). He indicated that the maximum draft for container ships is 45 feet.
12. Gerald Parks, Capes Shipping Agencies, stated that coal buyers in the Far East have indicated a need for deeper channels in Hampton Roads if the Port desires to maintain its competitive edge. Large ships are now topping off at Richard's Bay, South Africa.
13. Paul Horsball asked about the status of the Southern Branch 40-foot deepening project. Robert Pretlow indicated that it is currently in the Advanced Engineering and Design phase and discussions are currently underway with the Virginia Port Authority to determine how to best proceed with this effort.
14. Doug Scott expressed concern over the effect deep channels are having on the currents and depths in the vicinity of the Navy Base.
15. David Host expressed concern over the navigation problem experienced when larger vessels are transiting between Norfolk and Newport News due to the tight turn required at the area referred to as the "Triangle" adjacent to Carrier Pier 12.
16. Rick Amory indicated there is a current need to deepen the "Triangle Area" off Pier 12 to a depth of 50 feet to facilitate the turn of large vessels. Full widths are needed, if possible. The pilots may need to consider using tugs to make the turn. In addition, the pilots have asked the Coast Guard for assistance in transiting the wrong side of the channel (the outbound side) since it is deeper.

## Other Comments

17. Tom Mero, National Oceanic and Atmospheric Administration, stated that the Management Plan should include environmental measures and requirements.
18. Doug Scott asked about the long-term use of Craney Island Dredged Material Management Area. Tom Lochen indicated that, through intensive management efforts, it is estimated that the useful life can be extended to the year 2050.
19. Camelia Ravanbakht, Hampton Roads Planning District Commission, indicated that HRPDC is currently conducting an intermodal management study and asked if the Navigation Management Plan would address intermodal problems such as the coordination of river and bridge traffic. Tom Lochen indicated that the Plan would consider intermodal conflicts that impact navigation.
20. Bob Merhige, Virginia Port Authority, in response to question from Doug Scott, stated that the Transportation Committee has established the alignment for the new Hampton Roads crossing which would extend from the Peninsula to Craney Island and then across the Elizabeth River between Norfolk International Terminals and the Navy Base. He indicated that this alignment needs to be coordinated with the Corps of Engineers in view of potential impacts on Craney Island.
21. Rick Amory discussed the possible advantages of suspension bridges over tunnels since tunnels limit channel depths.
22. Tom Lochen stated that the Corps' immediate future efforts will be directed at making sure that all of the relevant concerns, needs, problems, and opportunities have been identified; that your future plans have been included; and that all appropriate historical record sources for reference in the Plan have been located. In this connection, we will be contacting many of you during the next few months for assistance.

# Navigation Management Plan

SCOPING MEETING

October 23, 1997

Name	Organization	Phone Number
Tom Lochen	Corps of Engineers	(757) 441-7539
ROBERT OSWALD	"	(757) 441-7513
W. Douglas Scott	NAVAL Station Harbor Pilot	(757) 444-3178
RICHARD L. KLEIN	CORPS OF ENGINEERS	757-441-7243
BOB OGLE	" " "	757 441-7761
Tony Watkinson	VA. Marine Resources Commission	757-242-2255
RB BATES	CITY OF NORFOLK	757 241-8437
Nick Perugini	NOAA	757-441-6746
JOHN CARLOCK	HRPDC	757-420-8300
HANK STRICKLAND	TCE	541-2153
MICHAEL STONE JR	W.M. Stone & Co. INC	757-642-8280
L. D. AMORY JR	Virginia Pilot Assn.	757-496-0995 ETS
Scott Kohler	United States Customs	757-445-2161 x258
L FRANK MACH	U.S. DEPT MARITIME ADMINISTRATION	757-441-6713
Will Davenport	NORFOLK STATE UNIV School of Business	757 683-2193

# Navigation Management Plan

## SCOPING MEETING

October 23, 1997

[illegible]



# Navigation Management Plan

## SCOPING MEETING

October 23, 1997

[illegible]

# Navigation Management Plan

## SCOPING MEETING

October 23, 1997

[illegible]

# Navigation Management Plan

## SCOPING MEETING

October 23, 1997

[illegible]

# Navigation Management Plan

## SCOPING MEETING

October 23, 1997

Name	Organization	Phone Number
Tom Lochen	Corps of Engineers	(757) 441-7539
Mitchell Perkins	VA. B. ASS FEDERATION	804-264-1124
Capt. Ray Hurst	KAWAK LTD (VA. Port Attorney)	757-5451981
Craig Seltzer	Corps of Eng's, Norfolk	757 4417390
Helene Haluska	" "	757 441-7008
Ken Kimidy	" "	757 441-7832
Joel Scusser	" "	757 441-7642
Rick Caldwell	Military Sealift Command	757-444-7713
Bob Bartel	COE	757-441-7102
Camelia Ravanbakhsh	H. R. P. D. C.	757-420-8300
LARRY ATKINSON	CCPO, ODU	757-683-4926
Tom Mero	NOAA/NOS - Oceanographic Services <sup>Products</sup>	301-713-2897
RICK SANFORD	SENATOR JOHN WARNER	441-3079
A. J. Park	CAPE'S SHIPPING AGENCIES	625-3658
Robert Grabb	Va Marine Resources Commission	247-2250
Jim McKenall	VA DEPT of BUSINESS ASSISTANCE	804-371-8227

# **WORKSHOP #2**

**JUNE 24, 1998**



DEPARTMENT OF THE ARMY  
NORFOLK DISTRICT, CORPS OF ENGINEERS  
FORT NORFOLK, 803 FRONT STREET  
NORFOLK, VIRGINIA 23510-1096

August 27, 1998

Planning Resources Branch

SEE LIST OF ADDRESSEES

Dear Sir or Madam:


Enclosed for your information are the final notes of the proceedings from the second workshop for the Navigation Management Plan for the Port of Hampton Roads conducted on June 24, 1998 at the Marriott Hotel in Norfolk. Draft notes were provided to attendees for their review and comment prior to finalizing the record of the workshop.

Included with the final notes are the list of port navigation concerns and the criteria to be used in prioritizing this list, both of which were finalized at the workshop. The Circle "A" advisory group is now complete and that list is also included with the final workshop notes.

The next action will be the prioritizing of the list of concerns by the Circle "A" advisory group. Potential solutions to be considered in addressing the primary items on this list will then be considered, which will lead to the development of a preliminary long-range plan. Progress will be monitored by the Circle "A" group. Additional workshops will be held to obtain comments from the Circle "B" workshop group.

If you have any questions about the Navigation Management Plan, please call Thomas J. Lochen at (757) 441-7539. Your cooperation is appreciated.

Sincerely,

  
Robert H. Reardon, Jr.  
Colonel, U.S. Army  
District Engineer

Enclosure

**NAVIGATION MANAGEMENT PLAN FOR THE  
PORT OF HAMPTON ROADS, VIRGINIA  
WORKSHOP #2--JUNE 24, 1998  
SUMMARY NOTES**

The second workshop for the Navigation Management Plan was held at the Marriott Hotel in Norfolk on June 24, 1998. A list of attendees is included as enclosure 1. The following is a summary of the comments expressed at the workshop. The comments are presented in the order as shown in the workshop agenda (enclosure 2).

The workshop was opened with a welcome and introductions, a discussion of the purpose of workshop, and a summary of activities conducted since the first workshop in October 1997. Noteworthy was the attendance of Rick Sanford from Senator Warner's office, Rich Williams from Senator Robb's office, Cliff Hicks from Congressman Pickett's office, and Sheryl Miller from Virginia Delegate Joannou's office. Margaret Ware of Drive Smart Hampton Roads and of the Hampton Roads Recreational Safe Boating Coalition then announced a conference held on May 20 and 21 entitled, "Rage Behind the Wheel on Land and Water" which was sponsored by the group Smart, Safe, Sober and by the Smith Mountain Lake Association. The goal of this conference was to develop a behavioral impact statement which will provide working tools for Virginia communities in their efforts to reduce aggressive behavior exhibited by boaters and automobile drivers. The draft report is now available. Ms. Ware passed around information concerning the conference, including a sign-up list for anyone interested in receiving a copy of the draft conference report. In addition, it was announced that Captain John Schrinner had just assumed his post as the Commander of the Marine Safety Office, U.S. Coast Guard (USCG), and as the new Captain of the Port. Captain Schrinner was not able to attend this workshop.

The list entitled "Identified Problems, Needs, Concerns, and Opportunities" was then discussed. This list was included in the letter announcing the workshop and was provided as a handout at the workshop itself. The finalized list is attached as enclosure 3.

1. Bill Hull, Hampton Roads Maritime Association, asked whether the list had been prioritized. It was explained that the concerns had not yet been prioritized. It was only a list of the concerns as identified in interviews with port users which had been grouped into general categories. Each of the concerns will be prioritized later by the Circle "A" advisory group which will be discussed later in the workshop.

2. Dr. John Boon, Virginia Institute of Marine Science (VIMS), indicated that the National Oceanic and Atmospheric Administration (NOAA) has a considerable amount of data concerning the port and complimented NOAA for their Physical Oceanographic Real-Time System (PORTS). He said, however, that there is a

**ENCLOSURE**

need for information on predicting and monitoring waves; there are models available for predicting waves, but a wave observation system is needed. He indicated that waves in the lower Chesapeake Bay can reach a height of 3.5 meters which can cause damage to vessels and bridge tunnel crossings.

3. LTJG John Mickett, USCG, also emphasized the significant impact of waves on navigation, especially at the mouth of the bay. He also expressed a need for 24-hour response time for side scan sonar surveys. He cited the recent incident on June 22 when two fishing vessels collided and one sank. The USCG had to close the channel and hold up at least four large commercial container ships. Side scan sonar surveys can determine if channels are being blocked by submerged objects such as sunken vessels or buoys. The quicker the surveys can be made, the faster the navigation channels can be opened.

4. Dr. Boon indicated that VIMS could probably make side scan units available to assist the USCG.

5. LCDR Andrew Beaver, NOAA, indicated that the Atlantic Marine Center may also have side scan sonar equipment and may be able to make a launch available for surveys on a 24-hour basis.

6. Jaleh Pett, Chesapeake Department of Planning, expressed interest in improvements to navigation in the vicinity of the Gilmerton Bridge on the Southern Branch of the Elizabeth River. It was explained that there is authorization for a 40-foot channel improvement including the 800-foot turning basin at the bridge. It was announced that Corps representatives would be available after the workshop to discuss any concerns in detail.

The handout entitled "Coordination Process" was then discussed, including an explanation of the Circle "A", "B", and "C" groups. A list for volunteers for the Circle "A" advisory group was passed around, and the duties of that group were explained. In summary, they include: (1) prioritization of the listed concerns, (2) review of subsequent workshop agendas, (3) review of the draft Navigation Management Plan, and (4) assistance with updates of the Plan in future years. The "Coordination Process" text and completed Circle "A" list are attached as enclosure 4.

1. Bob Jackson, Virginia Department of Environmental Quality, emphasized the need to consider environmental requirements, including the regulatory and permit process, early in the planning process. It was explained that the Plan itself would not lead to any kind of construction. Bob Jackson was invited to participate as a representative of his agency on the Circle "A" group.

2. Dr. Boon indicated that the Virginia Marine Resources Commission should also be included in Circle "A".



3. Kim Kimidy, Corps of Engineers, indicated that the Navigation Management Plan will take into account the entire regulatory/permit process from a local, state, and Federal perspective.

The handout entitled "Prioritization Criteria" was next discussed. It was explained that these criteria were to be considered by the Circle "A" advisory group when they prioritized the list of concerns. The criteria should be thought of as a checklist when weighing each concern, to make sure that all possible aspects are realized in the decision process. The text and finalized list of prioritization criteria are attached as enclosure 5.

1. Bill Hull suggested that national defense be included as a prioritization criterion. It was indicated that National Defense is very important and is included as part of the "Military Importance" criterion.

2. Neal Wright, Virginia Port Authority, asked why the category "Transient Pleasure Boat Operation" was not included under the "Vessel Traffic" category. It was explained that there is a need to separate temporary recreational vessel usage from routine and regular vessel traffic in the port. Hampton Roads is strategically located along the Atlantic Intracoastal Waterway and receives a considerable amount of transient business from these vessels enroute up and down the east coast. It was suggested that the category "Transient Pleasure Boat Operation" be changed to "Seasonal Pleasure Boat Operation".

3. Bill Cofer, Virginia Pilot Association, asked why anchorages were not included as part of the list of "Prioritization Criteria". It was explained that anchorages were a concern identified in the interview process and therefore must be included in the list of "Identified Problems, Needs, Concerns, and Opportunities". Whereas, the prioritization criteria are to be used as a tool in the prioritization process to evaluate concerns such as the anchorages.

4. Dr. Boon asked if the prioritization criteria category "Environmental Quality" would cover engineering and hydrodynamic modeling which are needed during the planning process in order to make good decisions. For example, it is important to evaluate and monitor the effects of channel deepening on estuarine circulation. Also, water quality should be included during planning. It was arranged for Dr. Boon to meet with the Corps staff after the workshop to further explore this idea.

5. John Carlock, Hampton Roads Planning District Commission, asked where intermodal conflicts were covered under the prioritization criteria. It was explained that this is viewed as a concern and is included in the list of "Identified Problems, Needs, Concerns, and Opportunities"; it will be prioritized by these separate evaluation criteria.

6. Bill Hull suggested that the Navigation Management Plan could also be used by the Governor and General Assembly, as well as the localities, for budgeting for port improvements. It was agreed that this is one of the purposes which will also be emphasized in the Plan itself.

7. LCDR Beaver asked about determining the feasibility of channel deepening--say to a depth of 60 feet. It was explained that feasibility studies are done separately under specific authorities which address the Federal interest in channel deepening projects. For example, the 55-foot deepening authorization was based on a feasibility study completed in the early 1980s.

Closing remarks were then made discussing future actions to be conducted on the Navigation Management Plan.

# Navigation Management Plan

WORKSHOP #2

June 24, 1998

Name	Organization	Phone Number
Tom Lochen	Corps of Engineers	(757) 441-7539
Ed Dozier	" "	" "
Barb Franier	" "	441-7866
Lisa Delphia	" "	441-7536
Tommy Glenn Bmcs	NAVAL STA Norfolk, Pent OPERATIONS	444-3939
Wlene, Haluska	Corps of Eng	441-7008
Tom Gann	Corps of Engineers	441-7775
Robert Pratlun	" " "	441-7385
SAM LOVELACE	TIDEWATER CONSTRUCTION	(757) 547-2153
RICHARD KLEIN	Corps of Engineers	757-441-7243
Sam McGee	Corps of Engineers	757-441-7616
ROBERT OSWALD	" "	757-441-7513
Joel Scusser	" "	757-441-7642
Ray Stanger	Corps	757-441-7861
Rick Caldwell	Military Sealift Command	757-444-1622
CDR Andrew Power	NOAA - At. Hydro Branch	757-441-6746
Tommy Richardson	ECN DEV CTY of PORTSMOUTH	757 393-8804
Ken Kimich	Corps of Engineers	757 441-7832
Marin Huber	" "	X 7765
Connie Rooke	USCG MSO Hampton Roads	757-441-3453
JOHN BUCKETT	USCG MSO HAMPTON ROADS	757 441-3290

ENCLOSURE 1

# Navigation Management Plan

WORKSHOP #2

June 24, 1998

Name	Organization	Phone Number
Tom Lochen	Corps of Engineers	(757) 441-7539
TOM MCCARTHY	CORPS OF ENGINEERS	(757) 441-7028
ROBERT BATES	CITY OF NORFOLK	(757) 241-8477
STEVE POWELL	CORPS OF ENGINEERS	(757) 441-7788
<b>BOB HYATT</b>	<b>CONDO-RE</b>	<b>441-7757</b>
BILL DUIS	VA POWER	857-2197
Sheryl Miller	Delegate Johnny JOHNSON	399-1700
STEVE WYLLIE	DOMINION TERMINAL ASSOC.	245-2275
NEAL WRIGHT	Virginian Port Authority	683-2150
Cliff Hicks	Congressman Owen Pickett	757-583-5892
Jalen Pett	CHESAPEAKE PLANNING	757-382-6076
PAT YACCARINO	BAY DIESEL CORP.	(757) 485-0075
Bob Jackson	REQ-TRD	(757) 518-2113
DUDLEY WARE	Norfolk Dredging Co.	(757) 547-9771
JOHN MOORE	ALCOA	757 485-3303
Bob MERHIGE	VPA	683-2107
Margaret Ware	DEVELOPMENTAL PROJECTS	813-4604

# Navigation Management Plan

**WORKSHOP #2**  
June 24, 1998

[illegible]

# Navigation Management Plan

## WORKSHOP #2

June 24, 1998

[illegible]

**NAVIGATION MANAGEMENT PLAN FOR THE  
PORT OF HAMPTON ROADS, VIRGINIA  
WORKSHOP #2--JUNE 24, 1998  
AGENDA**

1. Welcome, opening remarks, and introductions
2. Purpose of meeting--to discuss the following:
  - a. Activities since last workshop in October 1997
  - b. Results of interviews and other contacts to identify problems, needs, concerns, and opportunities
  - c. Selection and responsibilities of Circle "A" advisory group
  - d. Proposed prioritization criteria
  - e. Future activities
3. Activities since October 1997 workshop
  - a. Draft workshop notes prepared and coordinated with all attendees
  - b. Final workshop notes sent to entire mailing list of 400 port users
  - c. Research efforts continued
  - d. Identification of historical records and data sources continued
  - e. Preparation of draft Navigation Management Plan continued
  - f. Interviews and correspondence to identify problems, needs, concerns, and opportunities completed
  - g. Proposed prioritization criteria for ranking problems, needs, concerns, and opportunities developed
  - h. Article about the Plan published in the Journal of Commerce (4/29/98)
4. Results of interviews and other contacts
  - a. Alphabetical list of all problems, needs, concerns, and opportunities identified to date (see handout)
  - b. Discussion: Do you have any additions, corrections, or deletions?
5. Circle "A" advisory group
  - a. See "Coordination Process" handout
  - b. Discuss responsibilities
  - c. Reference partial list of participants
  - d. Ask for volunteers from private sector--see categories of geographic and functional representation needed
  - e. Vital that Circle "A" be completed and activated as soon as possible

6. Proposed prioritization criteria
  - a. See handout
  - b. Alphabetical list of proposed criteria to be considered
  - c. Discuss appropriateness of criteria
  - d. Do you have any additions, corrections, or deletions?
7. Future activities
  - a. Draft workshop notes prepared and coordinated with all attendees, including completed list of problems, needs, concerns, and opportunities
  - b. Final workshop notes sent to entire mailing list
  - c. Research efforts continued
  - d. Identification of historical records and data sources continued
  - e. Preparation of draft Navigation Management Plan continued
  - f. Circle "A" advisory group roster completed; Circle "A" meeting to discuss prioritization of the list of problems, needs, concerns, and opportunities conducted; and Circle "A" prioritization of the list of problems, needs, concerns, and opportunities completed
  - g. Prioritized list of problems, needs, concerns, and opportunities coordinated with entire mailing list of 400 port users
  - h. Potential solutions to be considered in addressing identified and prioritized problems, needs, concerns, and opportunities developed
  - i. Long-range plan formulation from potential solutions initiated
  - j. Workshop #3 scheduled for Fall 1998 to discuss progress; crucial meeting to the development of a final Navigation Management Plan
8. Concluding remarks
  - a. Copy of draft workshop notes will be sent to all attendees for review prior to sending to entire mailing list
  - b. Circle "A" members will be contacted about their meeting
  - c. Closing comments from attendees
  - d. Thanks for participating

Handouts:

- ◆ Agenda
- ◆ Table of Identified Problems, Needs, Concerns, and Opportunities excerpted from the draft Navigation Management Plan

**Norfolk District would like to thank the Hampton Roads Maritime Association for providing the refreshments for this meeting. Their support is appreciated very much.**



NOTE: This text is excerpted from the draft Navigation Management Plan.

**Table IV-1. IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES**

I. Anchorages

1. Sewells Point: Need to deepen the western-most anchorage opposite Sewells Point (K-2) from 40 feet to the authorized depth of 45 feet
2. Sewells Point: Need to increase the swinging radius in the eastern-most, 45-foot-deep anchorage opposite Sewells Point (K-1) from the authorized radius of 1,200 feet to the recommended radius of 1,500 feet
3. Sewells Point: Need to make broader use of the anchorages opposite Sewells Point
4. Lamberts Point: Need to make broader use of the anchorages opposite Lamberts Point
5. Newport News: Need to deepen both anchorages opposite Newport News from 40 feet to the authorized depth of 45 feet
6. Authorized 55-foot-deep anchorages: Need to be constructed
7. Need additional anchorages

II. Channels

1. Depths
  - a. Atlantic Ocean Channel: Need to deepen to the recommended depth of 60 feet
  - b. Thimble Shoal Channel: Need to deepen the inbound lane from 45 feet to 50 feet
  - c. Thimble Shoal Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet
  - d. Thimble Shoal Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet
  - e. Hampton Roads and Elizabeth River Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point
  - f. Hampton Roads and Elizabeth River Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point
  - g. Hampton Roads and Elizabeth River Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point
  - h. Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels
  - i. Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad Bridge

- j. Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge
    - k. Newport News, Channel to: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet
    - l. Newport News, Channel to: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet
  - 2. Widths
    - a. Need to deepen the entire eastern-most anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Hampton Roads and Elizabeth River Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated
    - b. Need to deepen the entire eastern-most anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Hampton Roads and Elizabeth River Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated
  - 3. Maintenance dredging: Continued and timely maintenance of port channels
  - 4. Crossings
    - a. Bridges
    - b. Tunnels
    - c. Utility crossings
  - 5. Multiple-use conflicts: Potential conflicts between recreational, commercial, and military uses
  - 6. Navigation aids
    - a. Better channel markings
    - b. More lighted buoys
  - 7. Obstructions
    - a. Derelict vessels, sunken barges, etc.
    - b. Debris and drift material
    - c. Docked boats which obstruct view of navigation channel
- III. Dredged Material Placement Areas
- 1. Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites
  - 2. Use of Craney Island Dredged Material Area for port development
- IV. Environmental Concerns
- 1. Contaminated areas along rivers and on river bottoms
  - 2. Deep channel effects on currents and depths in the vicinity of the Norfolk Naval Base
  - 3. Water quality
  - 4. Wetlands
- V. Funding

VI. Landside Concerns

1. Receiving, storage, and transfer facilities
2. Intermodal facilities which may impact navigation
3. Land for future development
4. Police and fire protection
5. Productive workforce
6. Impact of port growth on the host cities

VII. Navigation Information

1. Depths
2. Tides
3. Currents
4. Waves
5. Weather
6. Planning and management tools
7. Twenty-four hour side scan sonar capability

VIII. Rules and Regulations

1. Dredging permits
2. Unnecessary and burdensome

IX. Supplemental Facilities

1. Turning basins
2. Piers and wharves
3. Berthing and mooring areas
4. Additional dolphins for commercial vessels at Great Bridge Lock
5. Recreational boating facilities

**NOTE: This text is excerpted from the draft Navigation Management Plan and is written as if the entire document has been completed.**

## **COORDINATION PROCESS**

This section discusses the manner in which coordination is conducted with the many and varied stakeholders involved in the development of the Plan. In order to develop an integrated and comprehensive plan, it is important to obtain the input and perspective of a wide variety of port interests. Over 400 stakeholders were involved in the Plan including Federal, state, regional, and local government agencies; large and small port-related businesses; professional groups; environmental organizations; and local universities. A topical, alphabetical listing of all stakeholders is included in Appendix \_\_\_\_\_ and contains a point of contact and address.

## **CIRCLES OF INFLUENCE**

The importance of the stakeholder's participation in developing and maintaining this Plan cannot be overemphasized; it is essential to a successful effort. Because there are so many port users, the coordination process is based on "circles of influence"; a tiered approach which divides stakeholders into specific groups based on their degree of responsibility with respect to their participation in the development and review of the Plan. Picture the rings formed when a rock is thrown into a pond. The innermost circle is Circle "A", the next ring is Circle "B", and so on. Each successive circle contains all the interior circles. The Circle "A" stakeholders listed in the following table were the principal advisors and reviewers during the 3-year period the Plan was being formulated. These stakeholders also have the responsibility of updating the Plan periodically--every 3 to 5 years--to insure that the information contained therein remains viable and useful. Circle "B" stakeholders are substantially involved but to a lesser degree than Circle "A". They provide crucial information concerning the navigation needs of the port. These stakeholders, who were consulted through correspondence, personal interviews, and meetings are listed in a subsequent section of this segment. Circle "C" stakeholders include all of the others who have some connection and interest in the Plan. These

stakeholders were consulted primarily via correspondence during the 3-year period of development, and a complete listing of them is contained in Appendix \_\_\_\_.

Table I-7. CIRCLE "A" STAKEHOLDERS

Name	Point of Contact	Title	Address	Telephone Number
• National Oceanic and Atmospheric Administration	LCDR Andrew Beaver	Chief, Atlantic Hydrographic Branch	439 West York Street Norfolk, VA 23510-1114	757-441-6746
• U.S. Army Corps of Engineers	Thomas J. Lochen	NMP Technical Team Leader	Planning Division 803 Front Street Norfolk, VA 23510	757-441-7539
	AND			
	Richard L. Klein	Operations Manager, Norfolk Harbor Maintenance	Engineering Division 803 Front Street Norfolk, VA 23510	757-441-7243
• U.S. Coast Guard	CAPT John Schrinner	Captain of the Port	Marine Safety Office Suite 700 200 Granby Street Norfolk, VA 23510	757-441-3302
	POCs:			
	LTJG Connie Rooke	Planning & Preparedness Staff	Marine Safety Office Suite 700 200 Granby Street Norfolk, VA 23510	757-441-3453
	AND			
	John R. Walters	Chief, Waterways Management Section	Commander (AOWW) U.S. Coast Guard Atlantic Area 431 Crawford Street Portsmouth, VA 23704	757-398-6230

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• U.S. Fish and Wildlife Service	William M. Hester	Fish and Wildlife Biologist	6669 Short Lane Gloucester, VA 23061	757-693-6694
• U.S. Maritime Administration	L. Frank Mach	Region Maritime Programs	Room 211, Building 4D 7737 Hampton Boulevard Norfolk, VA 23505	757-441-6393
	ALTERNATE:			
	Willie Barnes	Region Environmental Programs	Room 211, Building 4D 7737 Hampton Boulevard Norfolk, VA 23505	757-441-6393
• U.S. Military Sealift Command	Rick Caldwell	Marine Transportation Specialist, Fleet Operations	Military Sealift Command Atlantic 1966 Morris Street Norfolk, VA 23511-3496	757-444-1623
• U.S. Navy	RADM R.T. Ziemer	Commander	Naval Base Norfolk Suite 2200 1530 Gilbert Street Norfolk, VA 23511-2797	757-322-2800
	POC: (To be determined)			

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Virginia Department of Environmental Quality	Robert F. Jackson, Jr.  ALTERNATE:  Kevin A Curling	Environmental Manager, Planning and Permit Support  Environmental Engineer, Planning and Permit Support	Tidewater Regional Office 5636 Southern Boulevard Virginia Beach, VA 23462  Tidewater Regional Office 5636 Southern Boulevard Virginia Beach, VA 23462	757-518-2113  757-518-2155
• Virginia Marine Resources Commission	Robert Grabh	Chief, Habitat Management Division	P.O. Box 756 Newport News, VA 23607	757-247-2250
• Virginia Port Authority	Robert R. Merhige, III	General Counsel and Deputy Executive Director	600 World Trade Center Norfolk, VA 23510	757-683-2107
• Hampton Roads Planning District Commission	John M. Carlock	Director of Physical and Environmental Planning	723 Woodlake Drive Chesapeake, VA 23320	757-420-8300
• Municipal Government, Northside	Robert G. Bates	Port Development Administrator and Harbor Master	Department of Planning and Development City of Newport News 2400 Washington Avenue Newport News, VA 23607	757-247-8437
• Municipal Government, Southside	G. Timothy Oksman	City Attorney	Portsmouth City Hall 801 Crawford Street Portsmouth, VA 23704	757-393-8731



Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Academic Institution of Higher Learning	Dr. John D. Boon	Professor of Marine Science	Department of Physical Sciences Virginia Institute of Marine Science P.O. Box 1346 Gloucester Pt., VA 23062	804-684-7272
• Craney Island Study Commission	George E. Watkins	Member	4301 Hatton Point Road Portsmouth, VA 23703	757-484-4040
• Dredging/Construction Company	T.J. Wright	President	Wright Dredging Company P.O. Box 16072 Chesapeake, VA 23328	757-482-5775
• Hampton Roads Maritime Association	J.J. Keever	Executive Vice President	236 East Plume Street Norfolk, VA 23510	757-622-2639
• Railroad Company	Robert E. Martinez	Assistant Vice President, Marketing	Norfolk Southern Corp. Three Commercial Place Norfolk, VA 23510-2748	757-629-2748
• Recreation Interest	Steve Phillips	Member, Hampton Roads Recreational Safe Boating Coalition	Boating Safety Specialist U.S. Coast Guard 431 Crawford Street Portsmouth, VA 23704	757-398-6204

Table 1-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
Recreation Interest (cont'd)	ALTERNATE:			
	Margaret Ware	Member, Hampton Roads Recreational Safe Boating Coalition	Drive Smart Consultant USAA Mid-Atlantic Region 5800 Northampton Blvd. Norfolk, VA 23502-5514	757-893-4604
• Ship Agent and Broker	David Host	Executive Vice President	T. Parker Host, Incorporated Suite 820 World Trade Center Norfolk, VA 23510	757-627-6286
• Ship Repair Interest, Major	J. Douglas Forrest	Vice President	Colonna's Shipyard, Inc. 400 East Indian River Road Norfolk, VA 23523	757-545-2414
• Ship Repair Interest, Minor	Patrick A. Yaccarino	Operations Manager	Bay Diesel Corporation 3736 Cook Boulevard Chesapeake, VA 23323-1604	757-485-0075
• Terminal, Coal	Charles E. Brinley	President and Chief Operating Officer	Dominion Terminal Associates P.O. Box 967-A Newport News, VA 23607	757-245-2275
	ALTERNATE:			
	Stephen A. Wylie	Manager, Production and Quality Control	Dominion Terminal Associates P.O. Box 967-A Newport News, VA 23607	757-245-2275 (extension 314)

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Terminal, Other Than Container and Coal	Phil Stedfast	Manager, Customer Relations	Elizabeth River Terminals, Incorporated 4100 Buell Street Chesapeake, VA 23324	757-543-0335 (extension 16)
• Trucking Company	Shirley Roebuck	Terminal Manager	Marine Freight Company, Incorporated 400 Lee Avenue Portsmouth, VA 23707	757-398-0679
• Tug Company	Paul Horsball	Vice President and General Manager	Moran Towing of Virginia, Incorporated P.O. Box 3415 Norfolk, VA 23514	757-625-6000
• Virginia Pilot Association	J. William Cofer	President	3329 Shore Drive Virginia Beach, VA 23451	757-496-0995
• Warehouse Company	Fred Schultz	General Manager	Norfolk Warehouse Distribution Centers, Incorporated 6969 Tidewater Drive Norfolk, VA 23509	757-857-6081
• Waterside Industry	John J. Moore, Sr.	Office Manager	Aluminum Company of America, Incorporated P.O. Box 2067 Portsmouth, VA 23702	757-485-3303

**NOTE: This text is excerpted from the draft Navigation Management Plan and is written as if the entire document has been completed.**

## **PRIORITIZATION CRITERIA AND RANKING**

Time and resources must be efficiently allocated to properly address the most important identified problems, needs, concerns, and opportunities facing the port. In order to effectively evaluate the many and various concerns within the port, it is necessary to develop a prioritized list. This portion of the section presents the relevant criteria used in the development of the priority ranking of the previously identified concerns. These criteria provide a checklist when weighing the individual concerns to insure that all pertinent aspects are considered in the decision process. The following is an alphabetical list of items which are considered important in establishing a priority of action.

- Benefits
- Business: Attraction and location of new domestic and foreign business
- Commerce
- Competitiveness of the port
- Congestion, delays, and losses
- Costs
- Dredging cost efficiency
- Economic impacts
- Efficiency/productivity
- Environmental quality
- Fiscal impact on host cities
- Growth of port
- Landside development
- Mega ship operation
- Military importance
- Safety

- Seasonal pleasure boat operation
- Vessel traffic

The relative importance of each criterion listed varied with respect to the problem, need, concern, or opportunity to which it was being applied, and to the individual making the judgement. A committee of port users and interests, referred to as Circle "A" stakeholders and identified in Section I, was responsible for assigning priority rankings to each of the identified concerns. The Circle "A" stakeholders considered the importance of each prioritization criterion as it applied to each concern in making their evaluations. The individual numeric rankings were then combined to develop a composite list based on the total assigned values.

**WORKSHOP #3**

**NOVEMBER 17, 1999**



DEPARTMENT OF THE ARMY  
NORFOLK DISTRICT, CORPS OF ENGINEERS  
FORT NORFOLK, 803 FRONT STREET  
NORFOLK, VIRGINIA 23510-1096

REPLY TO  
ATTENTION OF:

December 10, 1999

Planning Resources Branch

SEE LIST OF ADDRESSEES

Dear Sir or Madam:

Enclosed for your information are the proceedings from the third and final workshop for the Navigation Management Plan for the Port of Hampton Roads conducted on November 17, 1999, at the Marriott Convention Center in downtown Norfolk. The purpose of the workshop was to present the final report, including a brief overview of the report contents, the prioritized concerns, and the long-range strategic plan. The report will be available for mailing by February 2000. If you have any questions about the Navigation Management Plan, please call Thomas J. Lochen at (757) 441-7539.

Sincerely,

A handwritten signature in cursive script, reading "Allan B. Carroll".

Allan B. Carroll  
Colonel, Corps of Engineers  
District Engineer

Enclosures

# Navigation Management Plan Workshop

17 November 1999

Name	Organization	Phone Number	Fax Number
ROBERT OSWALD	CENAO-OC	441-7513	441-7721
DAVID PARSON	CENAO-RE	441-7735	441-7437
Robert Pretlow	CENAO-PM-C	441-7385	441-7036
TOM YANCEY	CENAO-PL	441-7775	441-7646
Ed Dozier	" "	543-3011	—
Michelle Benton	CENAO-EN-C	441-7491	441-7664
W Douglas Scott	NAV BASE	444-3178	444-5617
RICHARD KLEIN	CENAO-EN-C	441-7243	441-7664
STEVE POWELL	CENAO-EN-C	441-7788	441-7664
DAVID L. MILLER	SOUTHGATE TRUCKING	855-1934	855-4497
DAN M. THORNTON	SOUTHGATE CORP.	855-1934	855-4497
Sam McGee	CENAO-EN-C	441-7616	441-7664
ERWIE REILLY	NORSHIP CO	494-2974	494-4500
AL DYKES	NAV STA	444-3178	444-4930
SAM LOVELACE	TIDEWATER CONSTRUCTION	547-2153	547-4806
KEVIN CURLING	DEQ	518-2155	518-2123
PA YACCARINO	BAY DIESEL CORP.	485-0075	485-0232
PAUL A. BURNETTE	CHESAPEAKE BAY BRIDGE TUNNEL	331-2960	331-4565
Joe J. [unclear]	Chesapeake Bay Bridge Tunnel	331-2960	331-4565
John R. WALTERS	USCG - Atty WW M. [unclear]	398-6230	398-6334
J. William COFER	VA PILOT ASSN	496-0995 x3	481-1978

ENCLOSURE



# Navigation Management Plan Workshop

17 November 1999

Name	Organization	Phone Number	Fax Number
Ken Kimidy	Norfolk Dist, R.B	757-441-7832	X7678
Andrew Beane	NOAA, AMTB	757-441-6796	6601
Bob Boone	VDOT	804 786-5111	804 225-3686
Mary Reed Nelson	Senator Miller	627-4212	
Carlton E. Ay	SW&A Construction	523-0322	424-1356
John A. Simon	HRMA	757-622-2639	628-6302
Kelley PLATZ	LC	LC	2 LC
John A. Boone	VIRGINIA INST. MAR. SCI.	804/684-7272	
LT LARRY GREENE	US COAST GUARD MSO HAMPTON RDS	757/441-3290	757/441-6443
JEFF CUTRIQUET	VDOT - Central Office	804 225 4958	804 225 3686
RICK SANFORD	SEN J. WARNER	757 441-3079	757 441 6250
Bruce Spear	Sen. Chuck Robb	757-441-3124	
WALTER C. GRANTZ	CHESAPEAKE BAY BRIDGE TUNNEL DISTRICT	757-331-2960	757 331-4565
Kay Kemper	Kemper Consulting HRMA	757-627-1988	627-3196
HUGO VALVERDE	HR PLANNING DIST COMMISSION	757-420-8300	757-523-4881
Dennis O'Brien	Daily Press	757 2474791	757 245 8618
John S. Pucher	T. Pucher Host, Inc.	757 627 6286	- 3948
Rob Martinez	NS	629 2748	533 4824
Steve Phyllis	BOAT SAFETY COALITION	398-6204	398-6203
Bob MERTIGE	VPA	683-2107	683-2166
L. FRANK MAEST	maritime ADMINISTRATION	441-6393	440-0812

# Navigation Management Plan Workshop

*17 November 1999*

[illegible]

# Navigation Management Plan Workshop

***17 November 1999***

[illegible]

**NAVIGATION MANAGEMENT PLAN FOR THE  
PORT OF HAMPTON ROADS, VIRGINIA  
WORKSHOP #3--NOVEMBER 17, 1999  
AGENDA**

1. Welcome, opening remarks, and introductions
2. Purpose of workshop--to discuss the following:
  - a. Activities since last workshop in June 1998
  - b. Navigation Management Plan report description
  - c. Prioritized concerns
  - d. Long-range strategic plan
  - e. Future activities
3. Activities since June 1998 workshop
  - a. Circle "A" advisory group prioritization of the list of the 54 identified problems, needs, concerns, and opportunities completed
  - b. Analysis of top 15 concerns completed
  - c. Long-range plan developed
  - d. Preparation of draft Navigation Management Plan completed
  - e. Review and approval of draft Navigation Management Plan by Circle "A" completed
  - f. Recognized Circle "A" efforts--see "Circle 'A' Stakeholders" handout
4. Navigation Management Plan report description--see "Table of Contents" handout
5. Prioritized concerns
  - a. See "Prioritization of Identified Problems, Needs, Concerns, and Opportunities" handout
  - b. See "Executive Summary" handout
  - c. Analyzed top 15 concerns
  - d. Then developed long-range strategic plan
6. Long-range strategic plan
  - a. See "Location Map"
  - b. New construction elements
    - (1) Channel elements
    - (2) Other elements
    - (3) Concurrent nature
  - c. Ongoing strategic elements

7. Future activities
  - a. Prepare final workshop notes
  - b. Publish the final version of the Navigation Management Plan report, both paper copy and CD ROM
  - c. If you want a copy of the report, sign sheet at registration table and indicate paper copy or CD ROM
  - d. Begin update of time-sensitive data in 2 to 3 years
  - e. Begin complete update in 5 to 6 years
  - f. Both updates subject to availability of funds
8. Closing

Handouts:

- ◆ Agenda
- ◆ Circle "A" Stakeholders
- ◆ Table of Contents
- ◆ Prioritization of Identified Problems, Needs, Concerns, and Opportunities
- ◆ Executive Summary
- ◆ Location Map
- ◆ Request Form

**Norfolk District would like to thank the Hampton Roads Maritime Association for providing the refreshments for this meeting. Their support is appreciated very much.**

Table I-7. CIRCLE "A" STAKEHOLDERS

Name	Point of Contact	Title	Address	Telephone Number
• National Oceanic and Atmospheric Administration	LCDR Andrew Beaver	Chief, Atlantic Hydrographic Section	439 West York Street Norfolk, VA 23510-1114	757-441-6746
• U.S. Army Corps of Engineers	Thomas J. Lochen  AND	NMP Technical Team Leader	Planning Division 803 Front Street Norfolk, VA 23510	757-441-7539
	Richard L. Klein	Operations Manager, Norfolk Harbor Maintenance	Engineering Division 803 Front Street Norfolk, VA 23510	757-441-7243
• U.S. Coast Guard	CAPT John Schrinner	Captain of the Port	Marine Safety Office Suite 700 200 Granby Street Norfolk, VA 23510	757-441-3302
	POCs:			
	LTJG Connie Rooke	Planning & Preparedness Staff	Marine Safety Office Suite 700 200 Granby Street Norfolk, VA 23510	757-441-3453
	AND			
	John R. Walters	Chief, Waterways Management Section	Commander (AOWW) U.S. Coast Guard Atlantic Area 431 Crawford Street Portsmouth, VA 23704	757-398-6230

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• U.S. Fish and Wildlife Service	William M. Hester	Fish and Wildlife Biologist	6669 Short Lane Gloucester, VA 23061	804-693-6694
• U.S. Maritime Administration	L. Frank Mach	Region Maritime Programs	Room 211, Building 4D 7737 Hampton Boulevard Norfolk, VA 23505	757-441-6393
	ALTERNATE:			
	Willie Barnes	Region Environmental Programs	Room 211, Building 4D 7737 Hampton Boulevard Norfolk, VA 23505	757-441-6393
• U.S. Military Sealift Command	Rick Caldwell	Marine Transportation Specialist, Fleet Operations	Military Sealift Command Atlantic 1966 Morris Street Norfolk, VA 23511-3496	757-443-5641
• U.S. Navy	RADM R.T. Ziemer	Commander	Navy Region, Mid Atlantic Building A 6506 Hampton Boulevard Norfolk, VA 23508-1273	757-322-2800
	POC:			
	Ray K. Kirby	Deputy	Regional Engineer Command Code 50 9742 Maryland Avenue Norfolk, VA 23511-3095	757-322-2871

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Virginia Department of Environmental Quality	Robert F. Jackson, Jr.  ALTERNATE:  Kevin A. Curling	Environmental Manager, Planning and Permit Support  Environmental Engineer, Planning and Permit Support	Tidewater Regional Office 5636 Southern Boulevard Virginia Beach, VA 23462  Tidewater Regional Office 5636 Southern Boulevard Virginia Beach, VA 23462	757-518-2113  757-518-2155
• Virginia Marine Resources Commission	Robert Grabb	Chief, Habitat Management Division	2600 Washington Avenue Newport News, VA 23607	757-247-2250
• Virginia Port Authority	Robert R. Merhige, III	General Counsel and Deputy Executive Director	600 World Trade Center Norfolk, VA 23510	757-683-2107
• Hampton Roads Planning District Commission	John M. Carlock	Deputy Executive Director for Physical Planning	723 Woodlake Drive Chesapeake, VA 23320	757-420-8300
• Municipal Government, Northside	Robert G. Bates	Port Development Administrator and Harbor Master	Department of Planning and Development City of Newport News 2400 Washington Avenue Newport News, VA 23607	757-247-8437
• Municipal Government, Southside	G. Timothy Oksman	City Attorney	Portsmouth City Hall 801 Crawford Street Portsmouth, VA 23704	757-393-8731



Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Academic Institution of Higher Learning	Dr. John D. Boon	Professor of Marine Science	Department of Physical Sciences Virginia Institute of Marine Science Greate Road, Route 1208 Gloucester Pt., VA 23062	804-684-7272
• Craney Island Study Commission	George E. Watkins	Member	4301 Hatton Point Road Portsmouth, VA 23703	757-484-4040
• Dredging/Construction Company	T.J. Wright	President	Wright Dredging Company 9584 Bear Trap Circle Windsor, VA 23487	757-242-4800
• Hampton Roads Maritime Association	J.J. Keever	Executive Vice President	236 East Plume Street Norfolk, VA 23510	757-622-2639
• Railroad Company	Robert E. Martinez	Assistant Vice President, Marketing	Norfolk Southern Corp. Three Commercial Place Norfolk, VA 23510-9206	757-629-2748
• Recreation Interest	Steve Phillips	Member, Hampton Roads Recreational Safe Boating Coalition	Boating Safety Specialist U.S. Coast Guard 431 Crawford Street Portsmouth, VA 23704	757-398-6204

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
Recreation Interest (cont'd)	ALTERNATE:			
	Margaret Ware	Member, Hampton Roads Recreational Safe Boating Coalition	Drive Smart Consultant USAA Mid-Atlantic Region 5800 Northampton Blvd. Norfolk, VA 23502-5514	757-893-4604
• Ship Agent and Broker	David Host	Executive Vice President	T. Parker Host, Incorporated Suite 820 World Trade Center Norfolk, VA 23510	757-627-6286
• Ship Repair Interest, Major	J. Douglas Forrest	Vice President	Colonna's Shipyard, Inc. 400 East Indian River Road Norfolk, VA 23523	757-545-2414
• Ship Repair Interest, Minor	Patrick A. Yaccarino	Operations Manager	Bay Diesel Corporation 3736 Cook Boulevard Chesapeake, VA 23323-1604	757-485-0075
• Terminal, Coal	Charles E. Brinley	President and Chief Operating Officer	Dominion Terminal Associates Harbor Road, Pier 11 Newport News, VA 23607	757-245-2275
	ALTERNATE:			
	Stephen A. Wylie	Manager, Production and Quality Control	Dominion Terminal Associates Harbor Road, Pier 11 Newport News, VA 23607	757-245-2275 (extension 314)

Table I-7. CIRCLE "A" STAKEHOLDERS  
(Cont'd)

Name	Point of Contact	Title	Address	Telephone Number
• Terminal, Other Than Container and Coal	Phil Stedfast	Manager, Customer Relations	Elizabeth River Terminals, Incorporated 4100 Buell Street Chesapeake, VA 23324	757-543-0335 (extension 16)
• Trucking Company	Shirley Roebuck	Terminal Manager	Marine Freight Company, Incorporated 400 Lee Avenue Portsmouth, VA 23707	757-398-0679
• Tug Company	Paul Horsboll	Vice President and General Manager	Moran Towing of Virginia, Incorporated 1901 Brown Avenue Norfolk, VA 23504	757-625-6000
• Virginia Pilot Association	J. William Cofer	President	3329 Shore Drive Virginia Beach, VA 23451	757-496-0995
• Warehouse Company	Fred Schultz	General Manager	Norfolk Warehouse Distribution Centers, Incorporated 6969 Tidewater Drive Norfolk, VA 23509	757-857-6081

---

## TABLE OF CONTENTS

---

<u>Item</u>	<u>Page</u>
APPROVALS REGISTER	
EXECUTIVE SUMMARY	i
PREFACE	v
<u>SECTION I--INTRODUCTION</u>	
GENERAL	I-1
PURPOSE	I-2
AREA DESCRIPTION	I-3
GENERAL SETTING	I-3
IMPORTANCE OF THE HARBOR	I-4
KEY FUTURE NON-CORPS OF ENGINEERS ACTIVITIES	I-16
EXISTING REQUIREMENTS AND PROCEDURES	I-19
REGULATORY	I-19
ENVIRONMENTAL	I-22
PROJECT COOPERATION AGREEMENTS	I-23
OTHER	I-24
HISTORICAL RECORDS AND DATA SOURCES	I-25
PURPOSE	I-25
METHODOLOGY	I-25

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
SUMMARY	I-26
COORDINATION PROCESS	I-31
CIRCLES OF INFLUENCE	I-31
WORKSHOPS AND MEETINGS	I-38
RECOGNITION	I-38
PERIODIC UPDATING PROCEDURE	I-41
<u>SECTION II--POST-AUTHORIZATION CORPS OF ENGINEER PROJECTS</u>	
GENERAL	II-1
CONSTRUCTED PROJECTS/ELEMENTS OF PROJECTS	II-16
THIMBLE SHOAL CHANNEL	II-23
NORFOLK HARBOR PROJECT	II-24
CHANNEL TO NEWPORT NEWS	II-32
ATLANTIC INTRACOASTAL WATERWAY	II-33
LYNNHAVEN INLET	II-35
LITTLE RIVER (CREEK)	II-36
WILLOUGHBY CHANNEL	II-37
LAFAYETTE RIVER	II-37
CHANNEL TO NANSEMOND ORDNANCE DEPOT	II-38
BENNETTS CREEK	II-38
NANSEMOND RIVER	II-39

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
NEWPORT NEWS CREEK	II-39
HAMPTON CREEK	II-41
CHANNEL FROM PHOEBUS	II-41
COLLECTION AND REMOVAL OF DRIFT	II-41
PREVENTION OF OBSTRUCTIVE AND INJURIOUS DEPOSITS	II-42
RELATED PROJECTS	II-42
PROJECT ELEMENTS NOT YET CONSTRUCTED	II-43
50-FOOT INBOUND ELEMENT (50-FOOT FULL- WIDTH CHANNELS)	II-51
55-FOOT OUTBOUND ELEMENT	II-52
55-FOOT INBOUND ELEMENT (55-FOOT FULL- WIDTH CHANNELS)	II-54
ELIZABETH RIVER CHANNEL AND SOUTHERN BRANCH CHANNEL	II-56
DEFERRED ANCHORAGES	II-57
<u>SECTION III--PRE-AUTHORIZATION CORPS OF ENGINEERS PROJECTS/STUDIES</u>	
GENERAL	III-1
SECTION 933 STUDIES	III-1
SANDBRIDGE BEACH, VIRGINIA BEACH	III-2
VIRGINIA BEACH RESORT STRIP, VIRGINIA BEACH	III-3
OCEAN PARK BEACH, VIRGINIA BEACH	III-3

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
CENTRAL OCEAN VIEW BEACH, NORFOLK	III-4
WILLOUGHBY SPIT AREA, NORFOLK	III-4
DREDGING MASTER PLAN FOR THE CITY OF NORFOLK	III-4
ELIZABETH RIVER ENVIRONMENTAL RESTORATION STUDY	III-5
EASTWARD EXPANSION OF CRANEY ISLAND STUDY	III-6
LYNNHAVEN RIVER ENVIRONMENTAL RESTORATION STUDY	III-10
<u>SECTION IV--PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES</u>	
GENERAL	IV-1
GENERAL CONCERNS	IV-1
ANCHORAGES	IV-2
CHANNELS	IV-2
DREDGED MATERIAL PLACEMENT AREAS	IV-3
ENVIRONMENTAL CONCERNS	IV-3
FUNDING	IV-4
LANDSIDE CONCERNS	IV-4
NAVIGATION INFORMATION	IV-4
RULES AND REGULATIONS	IV-5
SUPPLEMENTAL FACILITIES	IV-5

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
SPECIFIC CONCERNS	IV-5
CHANNELS	IV-10
DREDGED MATERIAL PLACEMENT AREAS	IV-16
ENVIRONMENTAL CONCERNS	IV-17
FUNDING	IV-18
LANDSIDE CONCERNS	IV-18
NAVIGATION INFORMATION	IV-20
RULES AND REGULATIONS	IV-22
SUPPLEMENTAL FACILITIES	IV-22
PRIORITIZATION CRITERIA AND RANKING	IV-24
<u>SECTION V--RESOLUTION</u>	
GENERAL	V-1
LISTING OF CONCERNS TO BE EVALUATED	V-1
CONCERN NUMBER 1	V-3
DESCRIPTION	V-3
PROPOSED ACTION	V-3
PLAN ACCOMPLISHMENTS	V-4
ANALYSES	V-4
DIVISION OF PLAN RESPONSIBILITY	V-5
CONCLUSIONS	V-5



TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
CONCERN NUMBERS 2 TO 15	V-6 TO V-75
DITTO	
<u>SECTION VI--LONG-RANGE PLANNING STRATEGY</u>	
GENERAL	VI-1
LONG-RANGE STRATEGIC PLAN ELEMENTS	VI-3
NEW CONSTRUCTION ELEMENTS	VI-4
ONGOING STRATEGIC ELEMENTS	VI-15
SUMMARY	VI-17
CONCLUSIONS	VI-21

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
I-1	EXPORTS, IMPORTS, AND COASTWISE RECEIPTS AND SHIPMENTS MOVING THROUGH THE PORT OF HAMPTON ROADS IN 1995	I-6
I-2	COMMERCE THROUGH THE PORT OF HAMPTON ROADS, 1965 TO 1995	I-7
I-3	TRIPS AND DRAFTS OF VESSELS CALLING AT THE PORT OF HAMPTON ROADS, 1965 TO 1995	I-9
I-4	SHELLFISH AND FINFISH LANDINGS, 1992 TO 1996	I-14
I-5	PLEASURE BOAT REGISTRATIONS	I-15
I-6	HISTORICAL RECORDS AND DATA SOURCES	I-27
I-7	CIRCLE "A" STAKEHOLDERS	I-32

LIST OF TABLES  
(Cont'd)

<u>No.</u>	<u>Title</u>	<u>Page</u>
II-1	CORPS OF ENGINEERS POST-AUTHORIZATION PROJECTS	II-2
II-2	CORPS OF ENGINEERS PROJECT MAINTENANCE	II-17
II-3	CORPS OF ENGINEERS PROJECT DREDGING ELEMENTS NOT YET CONSTRUCTED	II-45
IV-1	IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES	IV-6
IV-2	PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS, AND OPPORTUNITIES	IV-25
V-1	PRIORITIZED CONCERNS SELECTED FOR EVALUATION	V-2
V-2	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 2	V-9
V-3	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 2	V-12
V-4	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 5	V-22
V-5	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 5	V-25
V-6	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 6	V-27
V-7	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 6	V-30
V-8	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 7 (TIE)	V-34
V-9	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 7 (TIE)	V-37

LIST OF TABLES  
(Cont'd)

<u>No.</u>	<u>Title</u>	<u>Page</u>
V-10	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 9	V-42
V-11	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 9	V-45
V-12	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 10 (TIE)	V-48
V-13	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 10 (TIE)	V-50
V-14	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 10 (TIE)	V-53
V-15	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 10 (TIE)	V-55
V-16	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 12	V-58
V-17	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 12	V-60
V-18	WATER QUALITY PROTECTION PROGRAMS IN VIRGINIA	V-63
V-19	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 14	V-67
V-20	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 14	V-70
V-21	INITIAL CONSTRUCTION COSTS FOR CONCERN NUMBER 15	V-73
V-22	INITIAL CONSTRUCTION COST SHARING FOR CONCERN NUMBER 15	V-75
VI-1	COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER 2 AND 9	VI-8

LIST OF TABLES  
(Cont'd)

<u>No.</u>	<u>Title</u>	<u>Page</u>
VI-2	COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER 6 AND 10 (TIE)	VI-11
VI-3	COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER 7 (TIE) AND 14	VI-14
VI-4	LONG-TERM PLANNING STRATEGY SUMMARY	VI-18

LIST OF PLATES

<u>No.</u>	<u>Title</u>
1	LOCATION MAP
2	LYNNHAVEN-LITTLE CREEK AREA
3	NORTHSIDE HAMPTON ROADS AREA
4	SOUTHSIDE HAMPTON ROADS AREA, PART 1
5	SOUTHSIDE HAMPTON ROADS AREA, PART 2
6	NANSEMOND RIVER AREA
7	LOCALLY PREFERRED CORRIDOR
8	SECTION 933 STUDIES

LIST OF APPENDIXES

A	GLOSSARY
B	PUBLISHED CHARTS AND MAPS
C	SHORELINE USE
D	LAWS, REGULATIONS, AND PERMITTING INFORMATION
E	HISTORICAL RECORDS, DATA SOURCES, AND OTHER REFERENCE MATERIAL

LIST OF APPENDIXES  
(Cont'd)

- |   |   |
|---|---|
| F | MAILING LIST  |
| G | WORKSHOP NOTES  |
| H | ENVIRONMENTAL AWARD AND FINANCIAL INCENTIVE<br>PROGRAMS |

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES

Concern		Assigned numeric ranking
<b>I. Anchorages</b>		
A.	Sewells Point: Need to deepen the westernmost anchorage opposite Sewells Point (K-2) from 40 feet to the authorized depth of 45 feet .....	18
B.	Sewells Point: Need to increase the swinging radius in the easternmost, 45-foot-deep anchorage opposite Sewells Point (K-1) from the authorized radius of 1,200 feet to the recommended radius of 1,500 feet .....	22
C.	Sewells Point: Need to make broader use of the anchorages opposite Sewells Point .....	19
D.	Lamberts Point: Need to make broader use of the anchorages opposite Lamberts Point .....	40
E.	Newport News: Need to deepen both anchorages opposite Newport News from 40 feet to the authorized depth of 45 feet .....	29
F.	Hampton Roads Bridge-Tunnel: Need to deepen the 1,500-foot swinging radius anchorage (F) just west of the Hampton Roads Bridge-Tunnel from 50 feet to the authorized depth of 55 feet.....	16
G.	Need additional anchorages.....	49
<b>II. Channels</b>		
A.	<b>Depths</b>	
1.	Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point .....	5
2.	Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point .....	7 (tie)
3.	Norfolk Harbor Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point .....	2

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

Concern		Assigned numeric ranking
4.	Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels .....	6
5.	Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad Bridge .....	10 (tie)
6.	Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge.....	12
7.	Channel to Newport News: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet.....	14
8.	Channel to Newport News: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet.....	9
B.	Widths	
1.	Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated.....	10 (tie)
2.	Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated.....	15
C.	Maintenance dredging: Continued and timely maintenance of port channels .....	1

Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

Concern		Assigned numeric ranking
D.	Crossings	
1.	Bridges.....	23
2.	Tunnels .....	17
3.	Utility crossings.....	42
E.	Multiple-use conflicts: Potential conflicts between recreational, commercial, and military uses .....	33
F.	Navigation aids	
1.	Better channel markings.....	26 (tie)
2.	More lighted buoys.....	37
G.	Obstructions	
1.	Derelict vessels, sunken barges, etc .....	30 (tie)
2.	Debris and drift material.....	48
3.	Docked boats that obstruct view of navigation channel.....	51
III.	Dredged Material Placement Areas	
A.	Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites .....	3
B.	Use of Craney Island Dredged Material Area for port development.....	4
IV.	Environmental Concerns	
A.	Contaminated areas along rivers and on river bottoms .....	20
B.	Deep channel effects on currents and depths in the vicinity of the Norfolk Naval Base.....	43
C.	Water quality .....	13
D.	Wetlands.....	28
V.	Funding.....	7 (tie)



Table IV-2. PRIORITIZATION OF IDENTIFIED PROBLEMS, NEEDS, CONCERNS,  
AND OPPORTUNITIES  
(Cont'd)

Concern		Assigned numeric ranking
VI.	Landside Concerns	
A.	Receiving, storage, and transfer facilities .....	38
B.	Intermodal facilities that may impact navigation .....	21
C.	Land for future development.....	45
D.	Police and fire protection .....	47
E.	Productive workforce .....	50
F.	Impact of port growth on the host cities.....	46
VII.	Navigation Information	
A.	Depths.....	32
B.	Tides .....	25
C.	Currents .....	24
D.	Waves .....	41
E.	Weather .....	34 (tie)
F.	Planning and management tools.....	39
G.	Twenty-four hour side scan sonar capability .....	34 (tie)
VIII.	Rules and Regulations	
A.	Dredging permits .....	44
B.	Unnecessary and burdensome .....	52
IX.	Supplemental Facilities	
A.	Turning basins .....	30 (tie)
B.	Piers and wharves .....	26 (tie)
C.	Berthing and mooring areas .....	36
D.	Additional dolphins for commercial vessels at Great Bridge Lock.....	54
E.	Recreational boating facilities .....	53

---

## EXECUTIVE SUMMARY

---

The Navigation Management Plan covers all navigation-related activities lying within the port and was developed in cooperation with the Virginia Port Authority with substantial input from numerous maritime interests located throughout the Hampton Roads area. The primary objectives of the Plan are to provide: (1) a comprehensive, integrated plan for the port; (2) a vehicle for spanning jurisdictions and disciplines to identify and resolve existing and potential issues; and (3) documentation of existing corporate knowledge.

Port users and interests identified over 50 problems, needs, concerns, and opportunities associated with the use and development of the port. Circle "A" stakeholders, the principal advisers and reviewers for the development of the Plan, reviewed the total list of concerns and prioritized the top 15 concerns as follows:

### TOP PRIORITIZED CONCERNS

Concern	Priority ranking
Maintenance dredging: Continued and timely maintenance of port channels	1
Norfolk Harbor Channel: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet to Lamberts Point	2
Need to extend life of Craney Island Dredged Material Area and/or locate alternative future placement sites	3
Use of Craney Island Dredged Material Area for port development	4

TOP PRIORITIZED CONCERNS  
(Cont'd)

Concern	Priority ranking
Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to 50 feet to Lamberts Point	5
Elizabeth River Channel: Need to deepen from 40 feet to the authorized depth of 45 feet from Lamberts Point to the junction of the Eastern and Southern Branch Channels	6
Norfolk Harbor Channel: Need to deepen the inbound lane from 45 feet to the authorized depth of 55 feet to Lamberts Point	7 (tie)
Funding	7 (tie)
Channel to Newport News: Need to deepen the outbound lane from 50 feet to the authorized depth of 55 feet	9
Southern Branch Channel: Need to deepen from 40 feet to the authorized depth of 45 feet to the Norfolk Southern Railroad bridge	10 (tie)
Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 50 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated	10 (tie)
Southern Branch Channel: Need to deepen from 35 feet to the authorized depth of 40 feet to the Gilmerton Bridge	12
Water quality	13
Channel to Newport News: Need to deepen the inbound lane from 50 feet to the authorized depth of 55 feet	14
Need to deepen the entire easternmost anchorage area opposite Sewells Point (K-1) and a small section of channel to 55 feet to provide easier transit between the Norfolk Harbor Channel and the Channel to Newport News; in addition, the K-1 anchorage would need to be relocated	15

From these top 15 prioritized concerns, a long-range strategic plan was developed. The plan is divided into two general categories: (1) new construction elements and (2) ongoing strategic elements. The new construction element section is further separated into channel elements and other elements. Channel elements include the various channel deepening considerations for the Norfolk Harbor Channel, the Channel to Newport News, the approach channels, the Elizabeth River Channel, the Southern Branch Channel, and the widening of the turning area at the Sewells Point Anchorage. Other new construction elements include the extension of the life and potential port development of the Craney Island Dredged Material Area. Ongoing strategic elements include maintenance dredging, funding, and improving water quality. The new construction elements associated with extending the useful life and port development of the Craney Island Dredged Material Area, as well as the ongoing strategic elements, would be accomplished concurrently with the implementation of the channel elements of the Plan. The proposed order of implementation is as follows:

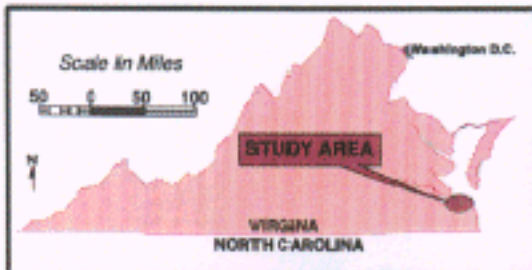
1. Inbound channels to 50-foot depth
2. Widening turn at Sewells Point (K-1) anchorage to 50-foot depth
3. Outbound channels to 55-foot depth
4. Widening turn at Sewells Point (K-1) anchorage to 55-foot depth
5. Elizabeth River and Southern Branch Channels to 45-foot depth
6. Southern Branch channel (Upper Reach) to 40-foot depth
7. Inbound channels to 55-foot depth

Extending the useful life and port development of the Craney Island Dredged Material area would be considered concurrently with the above listed channel elements. The ongoing elements of the Plan, i.e. maintenance dredging, funding, and improving water quality, would be a continuing part of the Plan.

The Plan was reviewed and approved by the Circle "A" stakeholders. It has been developed for planning purposes and to give appropriate decision makers information from which implementation and funding decisions may be made. The Plan is flexible,

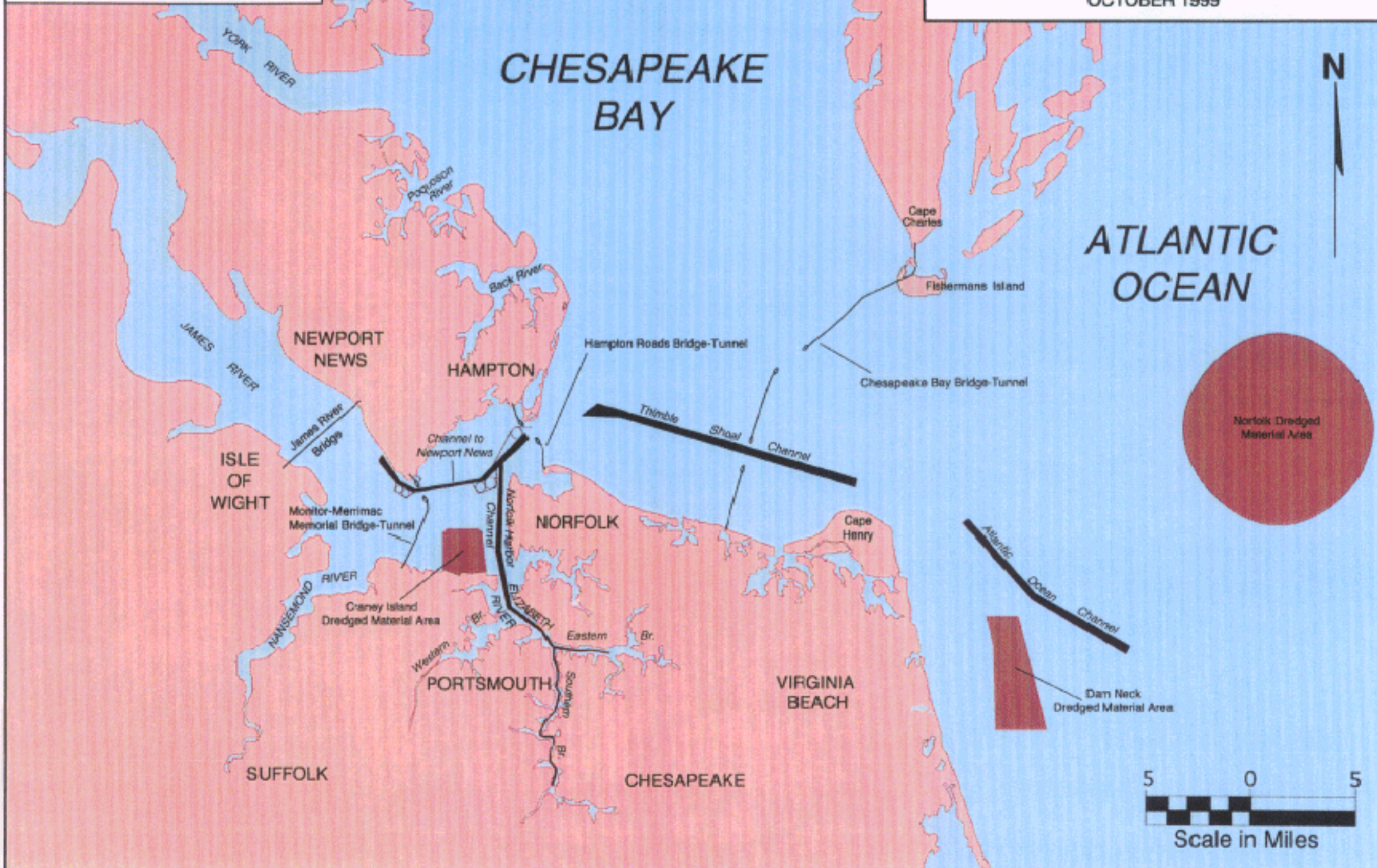
sensitive to the passing of time and events, and will require periodic updates to keep it current and viable. It is likely that the future of the port will reflect the past and there will never be enough resources to accomplish all that is desired. The Navigation Management Plan will assist Federal, state, local, and private investors to better allocate scarce port resources based on the prioritized concerns as established by port users and interests.





# NAVIGATION MANAGEMENT PLAN PORT OF HAMPTON ROADS LOCATION MAP

NORFOLK DISTRICT, CORPS OF ENGINEERS  
OCTOBER 1999





# REQUEST FORM

**I would like a copy of the final Navigation  
Management Plan report in the following format(s):**

**PAPER** \_\_\_\_\_ **CD-ROM** \_\_\_\_\_

**NAME:** \_\_\_\_\_

**ORGANIZATON:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PHONE:** \_\_\_\_\_

## **APPENDIX H**

### **ENVIRONMENTAL AWARD AND FINANCIAL INCENTIVE PROGRAMS**



---

## TABLE OF CONTENTS

### APPENDIX H

---

<u>Item</u>	<u>Page</u>
GENERAL	H-1
AWARD/REGONITION PROGRAMS	H-1
CHESAPEAKE ENVIRONMENTAL IMPROVEMENT COUNCIL	H-1
THE ELIZABETH RIVER PROJECT RIVER STAR PROGRAM	H-2
GOVERNOR’S ENVIRONMENTAL EXCELLENCE AWARDS FOR MANUFACTURERS	H-2
HAMPTON ROADS SANITATION DISTRICT	H-2
NORFOLK ENVIRONMENTAL ACTION AWARDS	H-3
PORTSMOUTH CLEAN COMMUNITY COMMISSION	H-3
VIRGINIA BEACH CLEAN COMMUNITY COMMISSION	H-4
VIRGINIA STEWARDSHIP AWARDS	H-4
FINANCIAL INCENTIVE PROGRAMS	H-4
CIT TECHNOLOGY AWARDS	H-5
NATIONAL INDUSTRIAL COMPETITIVENESS THROUGH ENERGY, ENVIRONMENT, AND ECONOMICS	H-5
POLLUTION PREVENTION GRANT PROGRAM	H-6

TABLE OF CONTENTS  
(Cont'd)

<u>Item</u>	<u>Page</u>
SMALL BUSINESS INNOVATIVE RESEARCH PROGRAM	H-6
VIRGINIA ALLIANCE FOR SOLAR ELECTRICITY	H-6

---

## **APPENDIX H**

### **ENVIRONMENTAL AWARD AND FINANCIAL INCENTIVE PROGRAMS**

---

#### **GENERAL**

Several award, recognition, and financial incentive programs for environmental stewardship are available through various sources in the Commonwealth of Virginia. The following sections of this appendix give the details on these programs and provide the sponsoring organization name, their mailing address, and their telephone number.

#### **AWARD/RECOGNITION PROGRAMS**

##### **CHESAPEAKE ENVIRONMENTAL IMPROVEMENT COUNCIL**

###### **Special Programs**

**P.O. Box 15225**

**Chesapeake, VA 23328**

**Phone: (757) 382-6411**

The Chesapeake Environmental Improvement Council sponsors an award program to honor individuals and organizations who have conducted outstanding programs in litter control, recycling, or beautification in Chesapeake. The program includes a Certificate of Appreciation, Outstanding Achievement Awards, and the Mayor's Outstanding Service Award. There are seven categories: (1) business and industry, (2) youth community organization, (3) adult community organization, (4) government agency, (5) communication, (6) educational institution, and (7) outstanding citizen. Applications are due by January 15<sup>th</sup> of each year. The awards are presented during a luncheon on the first Wednesday in March.

## **THE ELIZABETH RIVER PROJECT RIVER STAR PROGRAM**

**801 Boush Street, Suite 204**

**Norfolk, VA 23510**

**Phone: (757) 625-3648**

This recognition program is sponsored by the Elizabeth River Project in order to obtain public appreciation for those organizations that achieve pollution prevention goals and/or install wildlife habitats. The levels include commitment, achievement, and model. There is no cost to enter the program, other than a suggested donation to cover the cost of materials.

## **GOVERNOR'S ENVIRONMENTAL EXCELLENCE AWARDS FOR MANUFACTURERS**

**Virginia Manufacturers Association**

**P.O. Box 412**

**Richmond, VA 23218-0412**

**Phone: (804) 643-7489**

This award is sponsored by the Virginia Manufacturers Association and is designed to encourage industries to implement the Virginia's pollution prevention policy, promote all aspects of excellent environmental stewardship, and recognize outstanding efforts. Categories include environmental projects and environmental programs for both larger manufacturers and small manufacturers (500 or fewer employees). Applications are usually available in April and due back to the Virginia Manufacturers Association in July.

## **HAMPTON ROADS SANITATION DISTRICT**

**Industrial Waste Division**

**P.O. Box 5902**

**Virginia Beach, VA 23471-0902**

**Phone: (804) 460-7040**

Hampton Road Sanitation District's Pretreatment Excellence P2 Awards Program honors permitted industrial and commercial discharges for outstanding multi-media P2

efforts. Emphasis is placed on wastewater discharges, but other media are given strong consideration. Awards are in seven categories based on discharge flow rates. Applications must be postmarked by March 1<sup>st</sup>. The award ceremony is held in the beginning of May each year.

## **NORFOLK ENVIRONMENTAL ACTION AWARDS**

**Norfolk Environmental Commission**

**Ernie Morgan Environmental Action Center**

**3500 Granby Street**

**Norfolk, VA 23504**

**Phone: (757) 441-1347**

The Norfolk Environmental Commission, Ernie Morgan Environmental Action Center, sponsors the Norfolk Environmental Action Awards. Application forms are available after March 1<sup>st</sup> each year. Awards are for significant contributions to environmental excellence in the categories of business, education, government (including military), individuals, community groups, and youth groups. Awards include Certificate of Recognition, Environmental Award of Excellence, and the Ernie Morgan Award of Service. Awards are presented in October.

## **PORTSMOUTH CLEAN COMMUNITY COMMISSION**

**Department of Community Quality and Planning Services**

**Division of Planning and Zoning Services**

**801 Crawford Street**

**Portsmouth, VA 23704**

**Phone: (757) 393-8522**

This award program recognizes Portsmouth citizens, groups, organizations, schools, and clubs that contribute to litter control, beautification, and the planting or preservation of key landscaped gateways. Applications are available from the Portsmouth Clean Community Commission and are due by the end of September. The recognition ceremony is generally held before the end of October each year.

## **VIRGINIA BEACH CLEAN COMMUNITY COMMISSION**

**City of Virginia Beach**

**Municipal Center, Building 8**

**2565 Glebe Road**

**Virginia Beach, VA 23456-9074**

**Phone: (757) 427-4104**

The Virginia Beach Clean Community Commission recognizes individuals and organizations that contribute to the many initiatives of the commission at an annual recognition breakfast in September. Contributions can be monetary or for volunteer services. Check out their Environmental Activities/Programs brochure on the Internet at <http://www.virginia-beach.va.us/community/environ/ccc.htm>.

## **VIRGINIA STEWARDSHIP AWARDS**

**Virginia Petroleum Council**

**701 East Franklin Street, Suite 105**

**Richmond, VA 23219**

**Phone: (804) 225-8248**

This award is a public outreach effort co-sponsored by the Virginia Petroleum Council and the Office of the Secretary of Natural Resources. The purpose of the program is to promote pollution prevention, recycling, community and school ecology projects, and environmental clean-ups. There are four categories: (1) youth, (2) adult, (3) organization, and (4) communications/education projects. The submittal deadline for applications is April 15<sup>th</sup>. Awards are presented in late May or early June.

## **FINANCIAL INCENTIVE PROGRAMS**

The following is a listing of grants or other financial incentives pertaining to pollution prevention. In addition to the following grants and funds, Virginia has a tax exemption for pollution control equipment.

## **CIT TECHNOLOGY AWARDS**

**Virginia's Center for Innovative Technology**

**355 Crawford Street, Suite 200**

**Portsmouth, VA 23704**

**Phone: (757) 397-7016**

These awards are provided to Virginia companies that are developing a technology-based product or process. The CIT Technology Awards Program includes Challenge Awards, Innovation Awards, and Small Business Innovative Research Awards. Challenge Awards are for one-year research and development efforts; these awards range from \$25,000 to \$80,000. Innovation Awards are for short-term final development projects; these awards are \$25,000 and less. Small Business Innovative Research Awards are used to support Small Business Innovative Research/STTR Phase I winners with up to \$18,000 to leverage the company's subcontract to the academic institution (see Small Business Innovative Research Program description on page H-6).

## **NATIONAL INDUSTRIAL COMPETITIVENESS THROUGH ENERGY, ENVIRONMENT, AND ECONOMICS**

**Virginia Department of Environmental Quality**

**Office of Pollution Prevention**

**P.O. Box 10009**

**Richmond, VA 23340**

**Phone: (804) 698-4344**

This is a Department of Energy cost sharing grant program for projects that conserve energy, reduce waste, and have a positive economic benefit. Proposals must be submitted through a state energy, pollution prevention, or business development office. Grants up to \$400,000 are awarded and fund up to 50 percent of total project cost for up to 3 years. For information about submittal dates, etc., contact the Virginia Department of Environmental Quality or visit the Department of Energy on the Internet at <http://www.oit.doe.gov>.

## **POLLUTION PREVENTION GRANT PROGRAM**

**Virginia Department of Environmental Quality**

**Office of Pollution Prevention**

**P.O. Box 1009**

**Richmond, VA 23240**

**Phone: (804) 698-4344**

The Center for Innovative Technology, the A.L. Philpott Manufacturing Center, and the Virginia Department of Environmental Quality sponsor this program. These grants are to increase the competitiveness of Virginia's manufacturers through pollution prevention.

## **SMALL BUSINESS INNOVATIVE RESEARCH PROGRAM**

**Virginia Office of Innovative Technology**

**Office of the Secretary of Technology**

**110 South 7<sup>th</sup> Street**

**Richmond, VA 23219**

**Phone: (804) 371-5599**

Through this program, the EPA makes awards to small, high-tech companies for research and development of cutting-edge technologies. The purpose of the program is to encourage activities that improve the environment while creating jobs, increasing economic growth and productivity, improving the competitiveness of United States businesses. No matching funds are required.

## **VIRGINIA ALLIANCE FOR SOLAR ELECTRICITY**

**630 Solarex Court**

**Fredrick, MD 21703**

**Phone: (301) 698-4200**

Virginia Alliance for Solar Electricity is a joint venture between Solarex (a business unit of Amoco/Enron); Virginia Power; Virginia's Center for Innovative Technology; and the Virginia Department of Mines, Minerals and Energy. Cost-sharing funds up to approximately one-half the project cost are available for those interested in



having photovoltaic power systems installed at their facility. For large projects, technical and engineering assistance is also available.